Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 1 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer	signature
Mark:	

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 3 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Mark:

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 2 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nan	Full name of the lecturer				
Mark:					

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 4 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:				

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 5 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the le	eturer	signature
Mark:		

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 7 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- $2) \ \ calculate \ the \ diameters \ of \ solid \ and \ hollow \ shafts \ using \ conditions \ of \ strength \ and \ rigidity;$
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

'ull name	of the lec	turer			signat	ure

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 6 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	signature	
Mark:		

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 8 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 9 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer	signature
Mark:	

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 11 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 10 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer sig				
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 12 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 13 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	e of the lec	turer		signature	
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 15 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 14 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	e of the lecturer	signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 16 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:				

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 17 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the le	eturer	signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 19 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 18 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 20 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:				

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 21 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Mark:					

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 23 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 22 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nam	e of the lecturer	signature
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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 24 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1)\ copy\ from\ home\ problem\ No 3\ graph\ of\ torsional\ moment\ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:				

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 25 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 27 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 26 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Mark:						

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 28 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1)\ copy\ from\ home\ problem\ No 3\ graph\ of\ torsional\ moment\ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:				

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 29 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer			signature	
Mark:				

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 31 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 30 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 32 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 33 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nam	e of the lec	turer	signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 35 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 34 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 36 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 37 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 39 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 38 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nam	ne of the lecturer	signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 40 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 41 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer	signature
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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 43 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- $2) \ \ calculate \ the \ diameters \ of \ solid \ and \ hollow \ shafts \ using \ conditions \ of \ strength \ and \ rigidity;$
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 42 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 44 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 45 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nam	e of the lec	turer	signature
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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 47 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 46 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 48 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1)\ copy\ from\ home\ problem\ No 3\ graph\ of\ torsional\ moment\ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 49 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

Variant: 51

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 50 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 52 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 53 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer				signature	
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 55 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- $2) \ \ calculate \ the \ diameters \ of \ solid \ and \ hollow \ shafts \ using \ conditions \ of \ strength \ and \ rigidity;$
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 54 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 56 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1)\ copy\ from\ home\ problem\ No 3\ graph\ of\ torsional\ moment\ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 57 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 59 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 58 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer				signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 60 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1)\ copy\ from\ home\ problem\ No 3\ graph\ of\ torsional\ moment\ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 61 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer	signature
Mark:	

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 63 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 62 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	Full name of the lecturer		
Mark:			

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 64 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 65 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of	the lecturer	signature
Mark:		

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 67 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

ull name of the lecturer	signature

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 66 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nan	Full name of the lecturer		
Mark:			

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 68 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 69 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	e of the lec	turer		signature
Mark:				

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 71 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- $2) \ \ calculate \ the \ diameters \ of \ solid \ and \ hollow \ shafts \ using \ conditions \ of \ strength \ and \ rigidity;$
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

ull name of the lecturer	signature

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 70 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	Full name of the lecturer		
Mark:			

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 72 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1)\ copy\ from\ home\ problem\ No 3\ graph\ of\ torsional\ moment\ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 73 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer	signature
Mark:	

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 75 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 74 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	e of the lecturer	signature
Mark:		

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 76 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:				

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 77 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer	signature
Mark:	

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 79 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- $2) \ \ calculate \ the \ diameters \ of \ solid \ and \ hollow \ shafts \ using \ conditions \ of \ strength \ and \ rigidity;$
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer			signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 78 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nan	Full name of the lecturer			
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 80 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1)\ copy\ from\ home\ problem\ No 3\ graph\ of\ torsional\ moment\ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:				

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 81 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	e of the lec	turer	signature
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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 83 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- $2) \ \ calculate \ the \ diameters \ of \ solid \ and \ hollow \ shafts \ using \ conditions \ of \ strength \ and \ rigidity;$
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Mark:

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 82 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	e of the lecturer	signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 84 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 85 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nam	e of the lec	turer	signature
Mark:			

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Complexity: 1

Goal:

Variant: 87

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Mark:

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 86 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	e of the lec	turer	signature
Mark:			

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 88 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1)\ copy\ from\ home\ problem\ No 3\ graph\ of\ torsional\ moment\ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 89 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Variant: 91

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 90 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nam	ne of the lecturer	signature
Mark:		

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 92 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 93 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the le	eturer	signature
Mark:		

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 95 Complexity: 1

Given: thickness ratio a = d / D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 94 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nam	e of the lecturer	signature
Mark:		

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 96 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 97 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	e of the lec	turer	signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 99 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

ull name of the lecturer	signature

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 98 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nam	Full name of the lecturer					
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 100 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1)\ copy\ from\ home\ problem\ No 3\ graph\ of\ torsional\ moment\ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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wai K.			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 101 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer	signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 103 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	of the lea	signature	
Mark:			

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 102 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nan	Full name of the lecturer signature						
Mark:							

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 104 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 105 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer					signature
Mark:					

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Variant: 107

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

ull name of the lecturer	signature

Mark:

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 106 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	signature	
Mark:		

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 108 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Mark:			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 109 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer	signature
Mark:	

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 111 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 110 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 112 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:				

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 113 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer	signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 115 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 114 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 116 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 117 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer			signature
Mark:			

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 119 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- $2) \ \ calculate \ the \ diameters \ of \ solid \ and \ hollow \ shafts \ using \ conditions \ of \ strength \ and \ rigidity;$
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 118 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer			signature	
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 120 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1)\ copy\ from\ home\ problem\ No 3\ graph\ of\ torsional\ moment\ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 121 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	e of the lec	turer	signature
Mark:			

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 123 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 122 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nam	ne of the lecturer	signature	
Mark:			

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 124 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1)\ copy\ from\ home\ problem\ No 3\ graph\ of\ torsional\ moment\ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 125 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	of the lec	turer		signature
Mark:				

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 127 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	e of the lec	signature	
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 126 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	e of the lecturer	signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 128 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 129 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the le	signature	
Mark:		

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 131 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	of the lea	signature	
Mark:			

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 130 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	e of the lecturer	signature
Mark:		

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 132 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 133 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nam	ark:		signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 135 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	of the lea	signature	
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 134 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nam	Full name of the lecturer		
Mark:			

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Full name of the lecturer

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 136 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1)\ copy\ from\ home\ problem\ No 3\ graph\ of\ torsional\ moment\ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 137 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	ll name of the lecturer		signature	
Mark:				

National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Variant: 139

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 138 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	Full name of the lecturer			
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 140 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 141 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full nam	name of the lecturer	signature	
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 143 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 142 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name	full name of the lecturer	
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 144 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 145 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer				signature		
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 147 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

Mark:

- $1) copy \ from \ home \ problem \ No 3 \ graph \ of \ torsional \ moment \ distribution;$
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 146 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Full name of the lecturer

Variant: 148 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts;
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Mark:			

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 149 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).

Full name of the lecturer	signature	Full name of the lecturer	signature
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National aerospace university "Kharkiv Aviation Institute" Department of aircraft strength

Subject: mechanics of materials **Document:** home problem

Topic: Strength and Rigidity Analysis of Staticaly Determinate Shafts

Full name of the student, group

Variant: 150 Complexity: 1

Given: thickness ratio a = d/D = 0.8; [t] = 80 MPa; [y] = 1 degree/m.

Goal:

- 1) copy from home problem No3 graph of torsional moment distribution;
- 2) calculate the diameters of solid and hollow shafts using conditions of strength and rigidity;
- 3) draw the graphs of stress distributions in critical sections of solid and hollow shafts:
- 4) estimate the type of stress state in an arbitrary point of critical cross-section (selecting yourself solid or hollow shape of a shaft);
- 5) compare the weights of 1 meter-in-length solid and hollow strong shafts;
- 6) design the graph of twisting angle distribution for solid or hollow strong shaft (select yourself).