

Univerzitet u Tuzli
Fakultet elektrotehnike

ZBIRKA

**zadataka sa prijemnih ispita iz Matematike na
Fakultetu elektrotehnike u periodu od 2015-2017. godine
(za studijski program "Tehnički odgoj i informatika")**

Tuzla, maj 2018

UNIVERZITET U TUZLI Fakultet elektrotehnike TEHNIČKI ODGOJ I INFORMATIKA Tuzla, 09.07.2015.godine	KVALIFIKACIONI ISPIT IZ MATEMATIKE	GRUPA A
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1.	Vrijednost izraza $\frac{\frac{9}{4} - \frac{4}{9}}{\frac{3}{2} - \frac{2}{3}} \cdot \frac{6}{13}$ je:
	a) 1 b) $\frac{6}{13}$ c) $-\frac{6}{13}$ d) $\frac{6}{5}$
2.	Vrijednost izraza $\left[\frac{2}{3} - \frac{4}{5}\left(2 - \frac{1}{2}\right)\right] : \left[-\frac{4}{3} + \frac{8}{9}\left(2 + \frac{2}{5}\right)\right]$ je:
	a) $\frac{2}{3}$ b) $-\frac{3}{2}$ c) $\frac{3}{2}$ d) $-\frac{2}{3}$
3.	Pojednostavljenjem izraza $\left(a + \frac{9}{a-6}\right) \cdot \left(\frac{12}{a^2-3a} - \frac{a}{9-6a+a^2}\right)$
	a) $\frac{a-6}{a}$ b) $-\frac{a-6}{a}$ c) $\frac{6+a}{a}$ d) $-\frac{6+a}{a}$
4.	Proizvod rješenja sistema $2x - y = 4$ i $x + 3y = -5$ je:
	a) -1 b) 1 c) -2 d) 2
5.	Vrijednost izraza $\left(\sqrt[4]{\sqrt[4]{a^8}}\right)^3 : \left(\sqrt[6]{\sqrt[3]{a^9}}\right)^4$ je:
	a) $a^{\frac{4}{3}}$ b) a c) $a^{\frac{2}{3}}$ d) $a^{\frac{1}{3}}$
6.	Proizvod realnih rješenja jednačine $2x^2 - 5x + 2 = 0$ je:
	a) 1 b) $\frac{1}{4}$ c) -4 d) -1
7.	Skup realnih rješenja nejednačine $\frac{2x+1}{x-1} < 0$ je:
	a) $\left(-1, -\frac{1}{2}\right)$ b) $\left(-\frac{1}{2}, 1\right)$ c) $(1, +\infty)$ d) $(-\infty, -1)$
8.	Modul kompleksnog broja $Z = \frac{-3+i}{2-i}$ je:
	a) $\sqrt{10}$ b) 10 c) $\sqrt{2}$ d) 2
9.	Ako je $\cos 3x = \frac{1}{2}$, odrediti x tako da $x \in \left[0, \frac{\pi}{2}\right]$:
	a) $\frac{\pi}{9}$ b) $\frac{\pi}{3}$ c) $\frac{\pi}{6}$ d) $\frac{\pi}{2}$
10.	Za pravougli trougao su poznate vrijednosti katete 3 i hipotenuze 5. Koliko iznosi druga kateta?
	a) 8 b) 2 c) 12 d) 4

NAPOMENA

Poslije svakog zadatka ponuđena su četiri odgovora.
Zaokružite slovo ispred tačnog odgovora.
Svaki zadatak nosi 4 boda.
Samo zaokruženo tačno rješenje zadatka koje je potkrijepljeno izradom na pomoćnim papirima nosi 4 boda.
U ostalim slučajevima zadatak ne nosi bodove.

UNIVERZITET U TUZLI Fakultet elektrotehnike TEHNIČKI ODGOJ I INFORMATIKA Tuzla, 09.07.2015.godine	KVALIFIKACIONI ISPIT IZ MATEMATIKE	GRUPA A
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1.	$\frac{\frac{9}{4} - \frac{4}{9}}{\frac{3}{2} - \frac{2}{3}} \cdot \frac{6}{13} = \frac{\frac{81-16}{36}}{\frac{9-4}{6}} \cdot \frac{6}{13} = \frac{\frac{65}{36}}{\frac{5}{6}} \cdot \frac{6}{13} = \frac{65 \cdot 6}{36 \cdot 5} \cdot \frac{6}{13} = 1$
	a) 1 b) $\frac{6}{13}$ c) $-\frac{6}{13}$ d) $\frac{6}{5}$
2.	$\left[\frac{2}{3} - \frac{4}{5} \left(2 - \frac{1}{2} \right) \right] : \left[-\frac{4}{3} + \frac{8}{9} \left(2 + \frac{2}{5} \right) \right] = \left(\frac{2}{3} - \frac{4}{5} \cdot \frac{4-1}{2} \right) : \left(-\frac{4}{3} + \frac{8}{9} \cdot \frac{12}{5} \right) =$ $\left(\frac{2}{3} - \frac{6}{5} \right) : \left(-\frac{4}{3} + \frac{32}{15} \right) = \frac{10-18}{15} : \frac{-20+32}{15} = \frac{-8}{15} \cdot \frac{15}{-12} = \frac{2}{3}$
	a) $\frac{2}{3}$ b) $-\frac{3}{2}$ c) $\frac{3}{2}$ d) $-\frac{2}{3}$
3.	$\left(a + \frac{9}{a-6} \right) \cdot \left(\frac{12}{a^2-3a} - \frac{a}{9-6a+a^2} \right) = \frac{a^2-6a+9}{a-6} \cdot \left[\frac{12}{a(a-3)} - \frac{a^2}{(a-3)^2} \right] =$ $\frac{(a-3)^2}{a-6} \cdot \frac{12a-36-a^2}{a \cdot (a-3)^2} = \frac{1}{a-6} \cdot \frac{-(a-6)^2}{a} = -\frac{a-6}{a}$
	a) $\frac{a-6}{a}$ b) $-\frac{a-6}{a}$ c) $\frac{6+a}{a}$ d) $-\frac{6+a}{a}$
4.	$2x - y = 4 \quad / \cdot 3$ $x + 3y = -5$ $6x - 3y = 12$ $x + 3y = -5$ $7x = 7 \Rightarrow x = 1$ $1 + 3y = -5 \Rightarrow y = -2$ $x \cdot y = -2$
	a) -1 b) 1 c) -2 d) 2
5.	$\left(\sqrt[4]{\sqrt{a^8}} \right)^3 : \left(\sqrt[6]{\sqrt[3]{a^9}} \right)^4 = \left(\sqrt[8]{a^8} \right)^3 : \left(\sqrt[18]{a^9} \right)^4 = a^3 : \left(\sqrt{a} \right)^4 = a^3 : a^2 = a$
	a) $a^{\frac{4}{3}}$ b) a c) $a^{\frac{2}{3}}$ d) $a^{\frac{1}{3}}$
6.	$2x^2 - 5x + 2 = 0$ <p><i>Po Viete – ovim pravila proizvod rješenja kvadratne jednačine $ax^2 + bx + c = 0$ je :</i></p> $x_1 \cdot x_2 = \frac{c}{a} = \frac{2}{2} = 1$
	a) 1 b) $\frac{1}{4}$ c) -4 d) -1

7.	$\frac{2x+1}{x-1} < 0;$ $2x+1 > 0 \Rightarrow x > -\frac{1}{2}$ $x-1 > 0 \Rightarrow x > 1$ $x \in \left(-\frac{1}{2}, 1\right)$	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">-∞</th> <th style="text-align: center;">-1/2</th> <th style="text-align: center;">1</th> <th style="text-align: center;">+∞</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">2x+1</td> <td style="text-align: center;">-</td> <td style="text-align: center;">+</td> <td style="text-align: center;">+</td> <td></td> </tr> <tr> <td style="text-align: center;">x-1</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">+</td> <td></td> </tr> <tr> <td></td> <td style="text-align: center;">+</td> <td style="text-align: center;">-</td> <td style="text-align: center;">+</td> <td></td> </tr> </tbody> </table>		-∞	-1/2	1	+∞	2x+1	-	+	+		x-1	-	-	+			+	-	+	
	-∞	-1/2	1	+∞																		
2x+1	-	+	+																			
x-1	-	-	+																			
	+	-	+																			
a) $\left(-1, -\frac{1}{2}\right)$ b) $\left(-\frac{1}{2}, 1\right)$ c) $(1, +\infty)$ d) $(-\infty, -1)$																						
8.	$Z = \frac{-3+i}{2-i}$ $ Z = \frac{ -3+i }{ 2-i } = \frac{ -3+i }{\sqrt{2^2+(-1)^2}} = \frac{\sqrt{(-3)^2+1^2}}{\sqrt{5}} = \frac{\sqrt{10}}{\sqrt{5}} = \sqrt{2}$																					
a) $\sqrt{10}$ b) 10 c) $\sqrt{2}$ d) 2																						
9.	$\cos 3x = \frac{1}{2}$ <p>Za I kvadrant vrijedi: $3x = \frac{\pi}{3} \Rightarrow x = \frac{\pi}{9}$.</p>																					
a) $\frac{\pi}{9}$ b) $\frac{\pi}{3}$ c) $\frac{\pi}{6}$ d) $\frac{\pi}{2}$																						
10.	<p>Poznato je kateta $a = 3$ i hipotenuza $c = 5$.</p> <p>Druga kateta se može izračunati po Pitagorinoj teoremi:</p> $b = \sqrt{c^2 - a^2} = \sqrt{5^2 - 3^2} = 4.$																					
a) 8 b) 2 c) 12 d) 4																						

1.	Vrijednost izraza $\sqrt{\frac{3}{16} : \left(8 + \frac{1}{3}\right) + \frac{1}{25}}$
	a) 2 b) $\frac{1}{4}$ c) $\frac{1}{2}$ d) 1
2.	Vrijednost izraza $\left[\frac{2}{3} - \frac{4}{5}\left(2 + \frac{1}{2}\right)\right] : \left[\frac{4}{3} - \frac{8}{9}\left(2 + \frac{2}{5}\right)\right]$ je:
	a) $-\frac{1}{2}$ b) $-\frac{5}{3}$ c) $\frac{1}{2}$ d) $\frac{5}{3}$
3.	Pojednostavljenjem izraza $\left[\frac{b}{b+c-a} \cdot \left(\frac{1}{a} - \frac{1}{b+c}\right)\right](b+c)$ se dobiva:
	a) $\frac{b}{a}$ b) $\frac{a}{b+c-a}$ c) $\frac{b+c}{b+c-a}$ d) $b+c$
4.	Zbir rješenja sistema $2x+4y=-2$ i $-3x+5y=3$ je:
	a) -2 b) -1 c) 0 d) 1
5.	Vrijednost izraza $\sqrt{x^3} : \sqrt[3]{x^2}$ je:
	a) $\sqrt[3]{x}$ b) x^2 c) $\sqrt[6]{x^5}$ d) $\sqrt[3]{x^2}$
6.	Zbir realnih rješenja jednačine $x^2 - 3x + 2 = 0$ je:
	a) 2 b) -3 c) -2 d) 3
7.	Skup realnih rješenja nejednačine $\frac{3x+1}{4x+1} \geq 1$ je:
	a) $(0, 2]$ b) $(0, +\infty)$ c) $\left(-\frac{1}{4}, 0\right]$ d) $\left[-2, -\frac{1}{4}\right)$
8.	Modul kompleksnog broja $Z = \frac{-1+3i}{-2+i}$ je:
	a) $\sqrt{2}$ b) $\sqrt{10}$ c) 2 d) 5
9.	Ako je $\cos 2x = \frac{\sqrt{2}}{2}$, odrediti x tako da $x \in \left[0, \frac{\pi}{2}\right]$:
	a) $\frac{\pi}{2}$ b) $\frac{\pi}{4}$ c) $\frac{\pi}{8}$ d) $\frac{\pi}{12}$
10.	Stranice pravouganika su 6 i 8. Koliko iznosi dijagonala pravouganika?
	a) 14 b) 10 c) 7 d) 2
NAPOMENA	<p>Poslije svakog zadatka ponuđena su četiri odgovora. Zaokružite slovo ispred tačnog odgovora. Svaki zadatak nosi 4 boda. Samo zaokruženo tačno rješenje zadatka koje je potkrijepljeno izradom na pomoćnim papirima nosi 4 boda. U ostalim slučajevima zadatak ne nosi bodove.</p>

1.	Ako je $a = \frac{\sqrt{5}+1}{2}$ i $b = \frac{1-\sqrt{5}}{2}$, onda je $a^2 + b^2$:
	a) $2\sqrt{5}$ b) $\sqrt{5}$ c) 3 d) 1
2.	Vrijednost izraza $\sqrt{\frac{16}{9} + \frac{3}{25}} : \left(8 + \frac{1}{3}\right)$ je:
	a) $\frac{5}{3}$ b) $\frac{3}{5}$ c) $\frac{4}{5}$ d) 1
3.	Vrijednost izraza $\frac{8}{23} + \left[\frac{1}{2} + \left(\frac{1}{8} - \frac{1}{4}\right)\right] \cdot \frac{40}{23}$ je:
	a) $\frac{1}{23}$ b) $\frac{16}{23}$ c) -1 d) 1
4.	Vrijednost izraza $\left(\sqrt{\sqrt[6]{a^4}}\right)^{12} : \left(\sqrt[3]{\sqrt[4]{a^6}}\right)^8$ je:
	a) a^2 b) a c) 1 d) $\frac{1}{a}$
5.	Zbir rješenja sistema $2x - 3y = 7$ i $3x + 2y = 4$ je:
	a) -1 b) 1 c) 2 d) -2
6.	Proizvod realnih rješenja jednačine $3x^2 - 5x - 2 = 0$ je:
	a) $-\frac{2}{3}$ b) $-\frac{5}{3}$ c) $\frac{5}{3}$ d) -1
7.	Skup realnih rješenja nejednačine $\frac{4x-1}{5x-1} \geq 1$ je:
	a) $\left[\frac{1}{5}, \frac{1}{4}\right]$ b) $\left[-\frac{1}{4}, -\frac{1}{5}\right]$ c) $\left[\frac{1}{5}, 1\right]$ d) $\left[0, \frac{1}{5}\right)$
8.	Modul kompleksnog broja $Z = \frac{3-4i}{-1+2i}$ je:
	a) $2\sqrt{5}$ b) $\sqrt{5}$ c) 5 d) 1
9.	Ako je $\sin 3x = \frac{\sqrt{3}}{2}$, odrediti x tako da $x \in \left[0, \frac{\pi}{2}\right]$:
	a) $\frac{\pi}{3}$ b) $\frac{\pi}{6}$ c) $\frac{\pi}{9}$ d) $\frac{\pi}{12}$
10.	Vrijednosti hipotenuze i jedne katete pravouglog trougla su 5 i 3. Koliko iznosi površina trougla?
	a) 6 b) 4 c) 12 d) 15
NAPOMENA	Poslije svakog zadatka ponuđena su četiri odgovora. Zaokružite slovo ispred tačnog odgovora. Svaki zadatak nosi 4 boda. Samo zaokruženo tačno rješenje zadatka koje je potkrijepljeno izradom na pomoćnim papirima nosi 4 boda. U ostalim slučajevima zadatak ne nosi bodove.

1.	Vrijednost izraza $\sqrt{\frac{25}{16} + \frac{5}{3} : \left(\frac{1}{3} - 2\right)}$ je:
	a) $\frac{5}{4}$ b) $\frac{1}{4}$ c) $\frac{3}{4}$ d) 1
2.	Ako je $a = \frac{\sqrt{3}-1}{3}$ i $b = \frac{\sqrt{3}+1}{3}$, onda je $a^2 + b^2$:
	a) $\frac{8}{9}$ b) $\frac{4\sqrt{3}}{9}$ c) $\frac{4}{9}$ d) $\frac{2}{3}$
3.	Vrijednost izraza $\frac{13}{18} - \left[\frac{1}{9} - \left(\frac{1}{6} - \frac{2}{3} \right) \right] \cdot \frac{7}{11}$ je:
	a) $\frac{7}{11}$ b) $-\frac{1}{3}$ c) $\frac{2}{3}$ d) $\frac{1}{3}$
4.	Vrijednost izraza $\left(\sqrt{\sqrt[6]{a^3}}\right)^8 : \left(\sqrt[3]{\sqrt[4]{a^9}}\right)^2$ je:
	a) \sqrt{a} b) a c) a^2 d) $\sqrt[6]{a}$
5.	Zbir rješenja sistema $7x + 3y = 4$ i $x - 2y = 3$ je:
	a) -2 b) 2 c) 3 d) 0
6.	Proizvod realnih rješenja jednačine $3x^2 - 7x - 6 = 0$ je:
	a) 3 b) -2 c) $\frac{7}{3}$ d) 2
7.	Modul kompleksnog broja $Z = \frac{3+i}{2+i}$ je:
	a) 2 b) 1 c) $\sqrt{2}$ d) $\sqrt{5}$
8.	Skup realnih rješenja nejednačine $\frac{x+2}{2x-1} \geq 1$ je:
	a) $\left(\frac{1}{2}, 3\right]$ b) $\left(-\frac{1}{2}, \frac{1}{2}\right]$ c) $\left(-3, -\frac{1}{2}\right]$ d) $(-\infty, -3]$
9.	Ako je $\cos 2x = \frac{\sqrt{2}}{2}$, odrediti x tako da $x \in \left[0, \frac{\pi}{2}\right]$:
	a) $\frac{\pi}{12}$ b) $\frac{\pi}{8}$ c) $\frac{\pi}{4}$ d) $\frac{\pi}{6}$
10.	Stranice pravouganka su 16 i 12. Koliko iznosi dijagonala pravougaonika?
	a) 26 b) 24 c) 18 d) 20

NAPOMENA

Poslije svakog zadatka ponuđena su četiri odgovora.

Zaokružite slovo ispred tačnog odgovora.

Svaki zadatak nosi 4 boda.

Samo zaokruženo tačno rješenje zadatka koje je potkrijepljeno izradom na pomoćnim papirima nosi 4 boda.

U ostalim slučajevima zadatak ne nosi bodove.

1.	$\sqrt{\frac{25}{16} + \frac{5}{3} \cdot \left(\frac{1}{3} - 2\right)} = \sqrt{\frac{25}{16} + \frac{5}{3} \cdot \frac{1-6}{3}} = \sqrt{\frac{25}{16} + \frac{5}{3} \cdot \frac{-5}{3}} = \sqrt{\frac{25}{16} - 1} = \sqrt{\frac{25-16}{16}} = \sqrt{\frac{9}{16}} = \frac{3}{4}$
	a) $\frac{5}{4}$ b) $\frac{1}{4}$ c) $\frac{3}{4}$ d) 1
2.	$a^2 + b^2 = \left(\frac{\sqrt{3}-1}{3}\right)^2 + \left(\frac{\sqrt{3}+1}{3}\right)^2 = \frac{3-2\sqrt{3}+1}{9} + \frac{3+2\sqrt{3}+1}{9} = \frac{4-2\sqrt{3}+4+2\sqrt{3}}{9} = \frac{8}{9}$
	a) $\frac{8}{9}$ b) $\frac{4\sqrt{3}}{9}$ c) $\frac{4}{9}$ d) $\frac{2}{3}$
3.	$\frac{13}{18} - \left[\frac{1}{9} - \left(\frac{1}{6} - \frac{2}{3}\right)\right] \cdot \frac{7}{11} = \frac{13}{18} - \left[\frac{1}{9} - \frac{1-4}{6}\right] \cdot \frac{7}{11} = \frac{13}{18} - \left(\frac{1}{9} - \frac{-3}{6}\right) \cdot \frac{7}{11} = \frac{13}{18} - \left(\frac{1}{9} + \frac{3}{6}\right) \cdot \frac{7}{11} =$ $= \frac{13}{18} - \left(\frac{1}{9} + \frac{3}{6}\right) \cdot \frac{7}{11} = \frac{13}{18} - \frac{2+9}{18} \cdot \frac{7}{11} = \frac{13}{18} - \frac{11}{18} \cdot \frac{7}{11} = \frac{13}{18} - \frac{7}{18} = \frac{6}{18} = \frac{1}{3}$
	a) $\frac{7}{11}$ b) $-\frac{1}{3}$ c) $\frac{2}{3}$ d) $\frac{1}{3}$
4.	$\left(\sqrt{\sqrt[6]{a^3}}\right)^8 : \left(\sqrt[3]{\sqrt[4]{a^9}}\right)^2 = \left(\sqrt{\sqrt[6]{a^3}}\right)^8 : \left(\sqrt[3]{\sqrt[4]{a^9}}\right)^2 = \left[\left(\sqrt[6]{a^3}\right)^{\frac{1}{2}}\right]^8 : \left[\left(\sqrt[4]{a^9}\right)^{\frac{1}{3}}\right]^2 = \left(\sqrt[6]{a^3}\right)^4 : \left(\sqrt[4]{a^9}\right)^{\frac{2}{3}} =$ $= \left(a^{\frac{3}{6}}\right)^4 : \left(a^{\frac{9}{4}}\right)^{\frac{2}{3}} = a^{\frac{12}{6}} : a^{\frac{18}{12}} = a^2 : a^{\frac{3}{2}} = a^{2-\frac{3}{2}} = a^{\frac{1}{2}} = \sqrt{a}$
	a) \sqrt{a} b) a c) a^2 d) $\sqrt[6]{a}$
5.	$7x + 3y = 4 \quad / \cdot 2$ $x - 2y = 3 \quad / \cdot 3$ $14x + 6y = 8$ $3x - 6y = 9$ $17x = 17 \Rightarrow x = 1$ $1 - 2y = 3 \Rightarrow -2y = 2 \quad y = -1$ $x + y = 0$
	a) -2 b) 2 c) 3 d) 0
6.	$3x^2 - 7x - 6 = 0$ <p>Za rješenja kvadratne jednačine $ax^2 + bx + c = 0$ vrijedi da je njihov proizvod: $x_1 \cdot x_2 = \frac{c}{a}$.</p> $x_1 \cdot x_2 = \frac{-6}{3} = -2$
	a) 3 b) -2 c) $\frac{7}{3}$ d) 2
7.	$ Z = \frac{ 3+i }{ 2+i } = \frac{ 3+i }{ 2+i } = \frac{\sqrt{3^2+1^2}}{\sqrt{2^2+1^2}} = \frac{\sqrt{9+1}}{\sqrt{4+1}} = \frac{\sqrt{10}}{\sqrt{5}} = \sqrt{2}$
	a) 2 b) 1 c) $\sqrt{2}$ d) $\sqrt{5}$

8.	$\frac{x+2}{2x-1} \geq 1$ $D.p.: 2x-1 \neq 0 \Rightarrow x \neq \frac{1}{2}$ $\frac{x+2}{2x-1} - 1 \geq 0$ $\frac{x+2-2x+1}{2x-1} \geq 0$ $\frac{-x+3}{2x-1} \geq 0 \quad / \cdot (-1)$ $\frac{x-3}{2x-1} \leq 0$ $x \in \left(\frac{1}{2}, 3 \right]$												
	$-\infty \qquad \frac{1}{2} \qquad 3 \qquad +\infty$ <table border="1" data-bbox="683 264 1167 390"> <tbody> <tr> <td>$x-3$</td> <td>-</td> <td>-</td> <td>+</td> </tr> <tr> <td>$2x-1$</td> <td>-</td> <td>+</td> <td>+</td> </tr> <tr> <td>R</td> <td>+</td> <td>-</td> <td>+</td> </tr> </tbody> </table>	$x-3$	-	-	+	$2x-1$	-	+	+	R	+	-	+
$x-3$	-	-	+										
$2x-1$	-	+	+										
R	+	-	+										
	<p>a) $\left(\frac{1}{2}, 3 \right]$ b) $\left(-\frac{1}{2}, \frac{1}{2} \right]$ c) $\left(-3, -\frac{1}{2} \right]$ d) $(-\infty, -3]$</p>												
9.	$\cos 2x = \frac{\sqrt{2}}{2}$ $2x_1 = \frac{\pi}{4} + 2k\pi \Rightarrow x_1 = \frac{\pi}{8} + k\pi$ $x_1 = \frac{\pi}{8} \in \left[0, \frac{\pi}{2} \right]$ $2x_2 = \frac{7\pi}{4} + 2k\pi \Rightarrow x_2 = \frac{7\pi}{8} + k\pi$ $x_2 = \frac{7\pi}{8} \notin \left[0, \frac{\pi}{2} \right]$ <p>Rješenje jednačine: $\frac{\pi}{8}$.</p>												
	<p>a) $\frac{\pi}{12}$ b) $\frac{\pi}{8}$ c) $\frac{\pi}{4}$ d) $\frac{\pi}{6}$</p>												
10.	<p>Dijagonala pravougaonika je:</p> $d = \sqrt{a^2 + b^2} = \sqrt{12^2 + 16^2} = \sqrt{144 + 256} = \sqrt{400} = 20.$ <p>a) 26 b) 24 c) 18 d) 20</p>												

NAPOMENA

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Svaki zadatak nosi 4 boda.

Samo zaokruženo tačno rješenje zadatka koje je potkrijepljeno izradom na pomoćnim papirima nosi 4 boda.

U ostalim slučajevima zadatak ne nosi bodove.

1.	Ako je $a = \frac{\sqrt{3}+1}{3}$ i $b = \frac{\sqrt{3}-1}{3}$, onda je $a^2 + b^2$:
	a) $\frac{4}{9}$ b) $\frac{8}{9}$ c) $\frac{20}{9}$ d) $\frac{8}{3}$
2.	Vrijednost izraza $\sqrt{\frac{25}{16} - \frac{5}{3} : \left(2 - \frac{1}{3}\right)}$ je:
	a) $\frac{5}{12}$ b) $\frac{1}{4}$ c) $\frac{5}{4}$ d) $\frac{3}{4}$
3.	Vrijednost izraza $\frac{13}{18} + \left[\frac{1}{6} + \left(\frac{1}{9} - \frac{2}{3}\right)\right] \cdot \frac{4}{7}$ je:
	a) 1 b) $\frac{1}{7}$ c) $\frac{1}{2}$ d) $\frac{4}{7}$
4.	Vrijednost izraza $\left(\sqrt[6]{a^8}\right)^3 : \left(\sqrt[3]{a^9}\right)^2$ je:
	a) \sqrt{a} b) a c) a^2 d) $\sqrt[6]{a}$
5.	Zbir rješenja sistema $7x + 3y = 4$ i $2x - 3y = 5$ je:
	a) 2 b) 3 c) 0 d) -2
6.	Zbir realnih rješenja jednačine $3x^2 - 7x - 11 = 0$ je:
	a) 2 b) -3 c) $-\frac{11}{3}$ d) $\frac{7}{3}$
7.	Modul kompleksnog broja $Z = \frac{1-3i}{1+2i}$ je:
	a) $\sqrt{2}$ b) 2 c) $\sqrt{5}$ d) 1
8.	Skup realnih rješenja nejednačine $\frac{x-3}{2x-3} \geq 1$ je:
	a) $\left[-3, -\frac{3}{2}\right)$ b) $\left[0, \frac{3}{2}\right)$ c) $\left[\frac{3}{2}, 3\right)$ d) $[1, 2)$
9.	Ako je $\cos 2x = \frac{1}{2}$, odrediti x tako da $x \in \left[0, \frac{\pi}{2}\right]$:
	a) $\frac{\pi}{6}$ b) $\frac{\pi}{3}$ c) $\frac{\pi}{12}$ d) $\frac{\pi}{4}$
10.	Stranice pravouganika su 12 i 16. Koliko iznosi dijagonala pravougaonika?
	a) 28 b) 24 c) 18 d) 20

NAPOMENA

Poslije svakog zadatka ponuđena su četiri odgovora.
 Zaokružite slovo ispred tačnog odgovora.
 Svaki zadatak nosi 4 boda.
 Samo zaokruženo tačno rješenje zadatka koje je
 potkrijepljeno izradom na pomoćnim papirima nosi 4 boda.
 U ostalim slučajevima zadatak ne nosi bodove.

1.	$a^2 + b^2 = \left(\frac{\sqrt{3}+1}{3}\right)^2 + \left(\frac{\sqrt{3}-1}{3}\right)^2 = \frac{3+2\sqrt{3}+1}{9} + \frac{3-2\sqrt{3}+1}{9} = \frac{4+2\sqrt{3}+4-2\sqrt{3}}{9} = \frac{8}{9}$.
	a) $\frac{4}{9}$ b) $\frac{8}{9}$ c) $\frac{20}{9}$ d) $\frac{8}{3}$
2.	$\sqrt{\frac{25}{16} - \frac{5}{3} \cdot \left(2 - \frac{1}{3}\right)} = \sqrt{\frac{25}{16} - \frac{5}{3} \cdot \frac{6-1}{3}} = \sqrt{\frac{25}{16} - \frac{5}{3} \cdot \frac{5}{3}} = \sqrt{\frac{25}{16} - 1} = \sqrt{\frac{25-16}{16}} = \sqrt{\frac{9}{16}} = \frac{3}{4}$.
	a) $\frac{5}{12}$ b) $\frac{1}{4}$ c) $\frac{5}{4}$ d) $\frac{3}{4}$
3.	$\frac{13}{18} + \left[\frac{1}{6} + \left(\frac{1}{9} - \frac{2}{3}\right)\right] \cdot \frac{4}{7} = \frac{13}{18} + \left[\frac{1}{6} + \frac{1-6}{9}\right] \cdot \frac{4}{7} = \frac{13}{18} + \left(\frac{1}{6} + \frac{-5}{9}\right) \cdot \frac{4}{7} = \frac{13}{18} + \left(\frac{1}{6} - \frac{5}{9}\right) \cdot \frac{4}{7} =$ $= \frac{13}{18} + \frac{3-10}{18} \cdot \frac{4}{7} = \frac{13}{18} - \frac{7}{18} \cdot \frac{4}{7} = \frac{13}{18} - \frac{4}{18} = \frac{9}{18} = \frac{1}{2}$.
	a) 1 b) $\frac{1}{7}$ c) $\frac{1}{2}$ d) $\frac{4}{7}$
4.	$\left(\sqrt[6]{a^8}\right)^3 : \left(\sqrt[3]{\sqrt[4]{a^9}}\right)^2 = \left[\left(\sqrt[6]{a^8}\right)^{\frac{1}{2}}\right]^3 : \left[\left(\sqrt[4]{a^9}\right)^{\frac{1}{3}}\right]^2 = \left(\sqrt[6]{a^8}\right)^{\frac{3}{2}} : \left(\sqrt[4]{a^9}\right)^{\frac{2}{3}} =$ $= \left(a^{\frac{8}{6}}\right)^{\frac{3}{2}} : \left(a^{\frac{9}{4}}\right)^{\frac{2}{3}} = a^{\frac{24}{12}} : a^{\frac{18}{12}} = a^2 : a^{\frac{3}{2}} = a^{2-\frac{3}{2}} = a^{\frac{1}{2}} = \sqrt{a}$.
	a) \sqrt{a} b) a c) a^2 d) $\sqrt[6]{a}$
5.	$7x + 3y = 4$ $2x - 3y = 5$ $9x = 9 \Rightarrow x = 1$ $2 - 3y = 5 \Rightarrow -3y = 3 \Rightarrow y = -1$ $x + y = 0$.
	a) 2 b) 3 c) 0 d) -2
6.	$3x^2 - 7x - 11 = 0$ Za rješenja kvadratne jednačine $ax^2 + bx + c = 0$ vrijedi da je njihov zbir: $x_1 + x_2 = -\frac{b}{a}$. $x_1 + x_2 = -\frac{-7}{3} = \frac{7}{3}$.
	a) 2 b) -3 c) $-\frac{11}{3}$ d) $\frac{7}{3}$
7.	$ Z = \frac{ 1-3i }{ 1+2i } = \frac{ 1-3i }{ 1+2i } = \frac{\sqrt{1^2 + (-3)^2}}{\sqrt{1^2 + (-2)^2}} = \frac{\sqrt{1+9}}{\sqrt{1+4}} = \frac{\sqrt{10}}{\sqrt{5}} = \sqrt{2}$.
	a) $\sqrt{2}$ b) 2 c) $\sqrt{5}$ d) 1

8.	$\frac{x-3}{2x-3} \geq 1$ $D.p.: 2x-3 \neq 0 \Rightarrow x \neq \frac{1}{3}$ $\frac{x-3}{2x-3} - 1 \geq 0$ $\frac{x-3-2x+3}{2x-3} \geq 0$ $\frac{-x}{2x-3} \geq 0 \quad / \cdot (-1)$ $\frac{x}{2x-3} \leq 0$ $x \in \left(0, \frac{3}{2}\right]$	$-\infty \qquad 0 \qquad \frac{3}{2} \qquad +\infty$ <table border="1" data-bbox="685 256 1253 384"> <tbody> <tr> <td>x</td> <td>-</td> <td>+</td> <td>+</td> </tr> <tr> <td>$2x-3$</td> <td>-</td> <td>-</td> <td>+</td> </tr> <tr> <td>R</td> <td>+</td> <td>-</td> <td>+</td> </tr> </tbody> </table>	x	-	+	+	$2x-3$	-	-	+	R	+	-	+
x	-	+	+											
$2x-3$	-	-	+											
R	+	-	+											
	a) $\left[-3, -\frac{3}{2}\right)$	b) $\left[0, \frac{3}{2}\right)$	c) $\left[\frac{3}{2}, 3\right)$	d) $[1, 2)$										
9.	$\cos 2x = \frac{1}{2}$ $2x_1 = \frac{\pi}{3} + 2k\pi \Rightarrow x_1 = \frac{\pi}{6} + k\pi$ $x_1 = \frac{\pi}{6} \in \left[0, \frac{\pi}{2}\right]$ $2x_2 = \frac{5\pi}{3} + 2k\pi \Rightarrow x_2 = \frac{5\pi}{6} + k\pi$ $x_2 = \frac{5\pi}{6} \notin \left[0, \frac{\pi}{2}\right]$ <p>Rješenje jednačine: $\frac{\pi}{6}$.</p>													
	a) $\frac{\pi}{6}$	b) $\frac{\pi}{3}$	c) $\frac{\pi}{12}$	d) $\frac{\pi}{4}$										
10.	<p>Dijagonala pravougaonika je:</p> $d = \sqrt{a^2 + b^2} = \sqrt{12^2 + 16^2} = \sqrt{144 + 256} = \sqrt{400} = 20.$													
	a) 28	b) 24	c) 18	d) 20										

NAPOMENA

Poslije svakog zadatka ponuđena su četiri odgovora.

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Svaki zadatak nosi 4 boda.

Samo zaokruženo tačno rješenje zadatka koje je potkrijepljeno izradom na pomoćnim papirima nosi 4 boda.

U ostalim slučajevima zadatak ne nosi bodove.