

**UPUTSTVO ZA OCJENJIVANJE**
**MATURSKI/STRUČNI ISPIT – MATEMATIKA (OSNOVNI NIVO)**

16. 06. 2021. GODINA

**Rješenja zadataka višestrukog izbora**

Redni broj zadatka	Tačan odgovor
<b>1.</b>	<b>A</b>
<b>2.</b>	<b>C</b>
<b>3.</b>	<b>B</b>
<b>4.</b>	<b>C</b>
<b>5.</b>	<b>D</b>
<b>6.</b>	<b>A</b>
<b>7.</b>	<b>D</b>
<b>8.</b>	<b>C</b>

**9.**

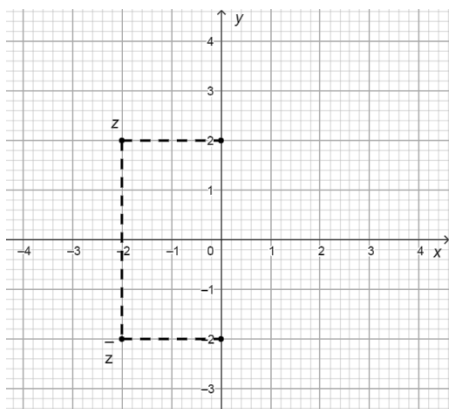
$$\downarrow \begin{array}{cc} 12 \text{ km} & 60 \text{ min} \\ 3,5 \text{ km} & x \text{ min} \end{array} \downarrow \dots\dots\dots 1 \text{ bod}$$

$$12 : 3,5 = 60 : x \dots\dots\dots 1 \text{ bod}$$

$$x = 17,5 \text{ ili } x = 17 \text{ min } 30 \text{ s} \dots\dots\dots 1 \text{ bod}$$

**10.**

**a)**  $z = -2 + 2i \Rightarrow \bar{z} = -2 - 2i \dots\dots\dots 1 \text{ bod}$


 $\dots\dots\dots 1 \text{ bod}$ 

**b)**  $|z| = \sqrt{(-2)^2 + 2^2} = 2\sqrt{2} \dots\dots\dots 1 \text{ bod}$

**11.**
**I način**

$$(x-3 > 0 \wedge 2x+1 < 0) \vee (x-3 < 0 \wedge 2x+1 > 0) \dots\dots\dots 1 \text{ bod}$$

$$\left(x > 3 \wedge x < -\frac{1}{2}\right) \vee \left(x < 3 \wedge x > -\frac{1}{2}\right) \dots\dots\dots 1 \text{ bod}$$

$$x \in \left(-\frac{1}{2}, 3\right) \dots\dots\dots 1 \text{ bod}$$

Tri su cjelobrojna rješenja:  $x = 0, x = 1, x = 2$  ..... 1 bod

**II način**

$$-\infty \qquad -\frac{1}{2} \qquad 3 \qquad +\infty$$

$x-3$	-	-	+
$2x+1$	-	+	+

..... 2 boda

$$\frac{x-3}{2x+1} < 0 \text{ za } x \in \left(-\frac{1}{2}, 3\right) \dots\dots\dots 1 \text{ bod}$$

Tri su cjelobrojna rješenja:  $x = 0, x = 1, x = 2$  ..... 1 bod

**12.**

$$x_1 + x_2 = \frac{-b}{a} = 3 \dots\dots\dots 1 \text{ bod}$$

$$x_1 \cdot x_2 = \frac{c}{a} = -2$$

$$y_1 + y_2 = x_1 + 3 + x_2 + 3 = 3 + 6 = 9 \dots\dots\dots 1 \text{ bod}$$

$$y_1 \cdot y_2 = (x_1 + 3)(x_2 + 3) = x_1x_2 + 3(x_1 + x_2) + 9 = 16 \dots\dots\dots 1 \text{ bod}$$

$$y^2 - 9y + 16 = 0 \dots\dots\dots 1 \text{ bod}$$

**13.**

$$80 \cdot 9^x = 240 \dots\dots\dots 1 \text{ bod}$$

$$3^{2x} = 3 \dots\dots\dots 1 \text{ bod}$$

$$2x = 1 \Rightarrow x = \frac{1}{2} \dots\dots\dots 1 \text{ bod}$$

14.

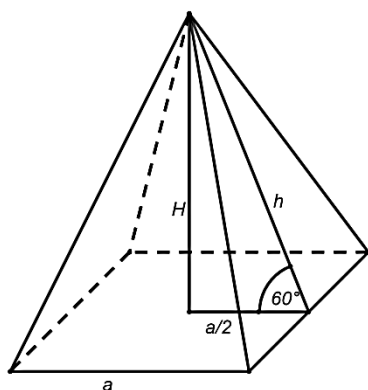
$$\sin x \left( 1 + \frac{2}{\sqrt{3}} \cos x \right) = 0 \dots\dots\dots 1 \text{ bod}$$

$$\sin x = 0 \vee \cos x = -\frac{\sqrt{3}}{2} \dots\dots\dots 1 \text{ bod}$$

$$\sin x = 0 \Rightarrow x \in \{0, \pi, 2\pi\} \dots\dots\dots 1 \text{ bod}$$

$$\cos x = -\frac{\sqrt{3}}{2} \Rightarrow x \in \left\{ \frac{5\pi}{6}, \frac{7\pi}{6} \right\} \dots\dots\dots 1 \text{ bod}$$

15.



Posmatra se trougao čije su stranice  $H, h$  i  $\frac{a}{2}$

$$\operatorname{tg} 60^\circ = \frac{H}{\frac{a}{2}} \dots\dots\dots 1 \text{ bod}$$

$$\sin 60^\circ = \frac{H}{h} \dots\dots\dots 1 \text{ bod}$$

$$h = \frac{H}{\sin 60^\circ} = \frac{\frac{a}{2} \operatorname{tg} 60^\circ}{\sin 60^\circ} = \frac{\frac{\sqrt{3}}{2}}{\frac{\sqrt{3}}{2}} = 2 \text{ cm} \dots\dots\dots 1 \text{ bod}$$

16.

$$(x+1)^2 + (y-1)^2 = 3 \text{ ili koordinate centra: } C(-1,1) \dots\dots\dots 1 \text{ bod}$$

$$(x+1)^2 + (y-1)^2 = 2 \dots\dots\dots 1 \text{ bod}$$

**17.**

$$S(1,3) \dots\dots\dots 1 \text{ bod}$$

$$k_{MN} = -\frac{1}{2} \dots\dots\dots 1 \text{ bod}$$

$$s : k_1 = -\frac{1}{k_{MN}} = 2 \dots\dots\dots 1 \text{ bod}$$

$$s : (y-3) = 2(x-1) \Rightarrow y = 2x+1 \dots\dots\dots 1 \text{ bod}$$

**18.**

$$P_{op} : B = 2 : \pi$$

$$P_{op} = rH \dots\dots\dots 1 \text{ bod}$$

$$H = 2r = 6 \dots\dots\dots 1 \text{ bod}$$

$$V = \frac{1}{3} \cdot 9 \cdot \pi \cdot 6 = 18\pi \dots\dots\dots 1 \text{ bod}$$

**19.**

$$\lim_{x \rightarrow 0} \frac{\sin(2021x)}{x} = \lim_{x \rightarrow 0} \frac{\sin(2021x)}{2021x} \cdot 2021 \dots\dots\dots 1 \text{ bod}$$

$$2021 \cdot 1 = 2021 \dots\dots\dots 1 \text{ bod}$$

**20.**

**I način**

$$f'(x) = \frac{(x^2+2)' \cdot x - (x^2+2) \cdot (x)'}{x^2} \dots\dots\dots 1 \text{ bod}$$

$$f'(x) = \frac{2x \cdot x - (x^2+2) \cdot 1}{x^2} = \frac{x^2-2}{x^2} \dots\dots\dots 1 \text{ bod}$$

**II način**

$$f(x) = x + \frac{2}{x} \dots\dots\dots 1 \text{ bod}$$

$$f'(x) = 1 - \frac{2}{x^2} = \frac{x^2-2}{x^2} \dots\dots\dots 1 \text{ bod}$$