

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

JANUAR 2023. GODINA

**Rješenja zadataka višestrukog izbora**

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

**9.**

$$G = 150000\text{€}, p_1 = 65\%, P_1, P_2 = ?$$

$$P_1 = \frac{150000\text{€} \cdot 65}{100} = 97500\text{€} \text{ ili } \frac{65}{100} \cdot 150000 \text{ ili } \frac{35}{100} \cdot 150000 \dots\dots\dots 1 \text{ bod}$$

$$P_1 = 97500\text{€}, P_2 = 150000\text{€} - 97500\text{€} = 52500\text{€} \dots\dots\dots 1 \text{ bod}$$

**10.**

$$y^2 = (2 - 3\sqrt{7})^2 = 67 - 12\sqrt{7} \dots\dots\dots 1 \text{ bod}$$

$$y^2 - 4y - 15 = 67 - 12\sqrt{7} - 4(2 - 3\sqrt{7}) - 15 = 44 \dots\dots\dots 1 \text{ bod}$$

**11.**

$$\frac{x^2 - 4x + 4}{(x-2)(x^2 + 2x + 4)} \cdot (x^2 + 2x + 4) \text{ ili } \frac{(x-2)^2}{x^3 - 8} \cdot (x^2 + 2x + 4) \dots\dots\dots 1 \text{ bod}$$

$$\frac{(x-2)^2}{(x-2)(x^2 + 2x + 4)} \cdot (x^2 + 2x + 4) = x - 2 \dots\dots\dots 1 \text{ bod}$$

**12.**

$3(8-x)(5-x) - x(1+3x) = 0$  ..... 1 bod

$3(40-5x-8x+x^2) - x - 3x^2 = 0$  ..... 1 bod

$120 - 40x = 0 \Rightarrow x = 3$  ..... 1 bod

**13.**

Funkcija dostiže minimum za  $x = -\frac{b}{2a} = 2$  ..... 1 bod

Funkcija je opadajuća na intervalu  $(-\infty, 2]$  ..... 1 bod

Najveća vrijednost na segmentu  $[0, 2]$  je za  $x = 0$  ..... 1 bod

**14.**

$10^{-2x(x-3)} = 10^{5-x}$  ..... 1 bod

$-2x(x-3) = 5-x$  ..... 1 bod

$-2x^2 + 7x - 5 = 0 \Rightarrow x_1 = 1, x_2 = \frac{5}{2}$  ..... 1 bod

**15.**

**a)**

$x+2 > 0 \wedge x-2 > 0 \Rightarrow x > 2$  ..... 1 bod

$\log_2(x+2) = -\log_2(x-2)$  ..... 1 bod

$\log_2(x+2)(x-2) = 0 \Rightarrow (x+2)(x-2) = 1$  ..... 1 bod

$x^2 = 5 \Rightarrow x = \sqrt{5}$  ..... 1 bod

**b)**

$f^{-1}(f(x)) = x$  tj.  $f^{-1}(\log_2(x+2)) = x$  ..... 1 bod

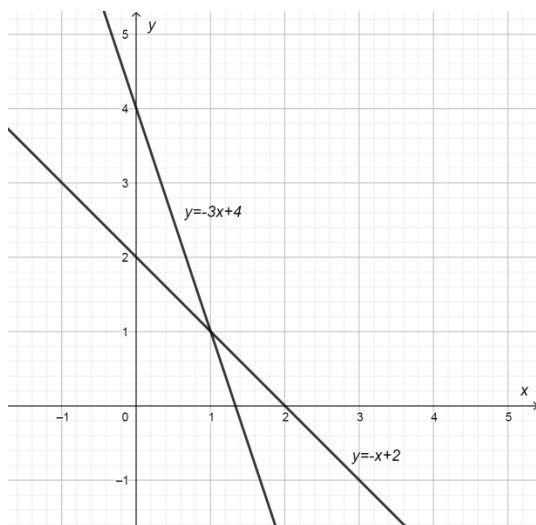
$\log_2(x+2) = t \Rightarrow x = 2^t - 2$  tj.  $f^{-1}(x) = 2^x - 2$  ..... 1 bod

**16.**

$2\sin^2 x + 5(1 - \sin^2 x) = 1 \Rightarrow 2\sin^2 x + 5 - 5\sin^2 x = 1 \Rightarrow 3\sin^2 x = 4$  ..... 1 bod

$3\sin^2 x = 4 \Rightarrow \sin^2 x = \frac{4}{3}$ , a kako je  $-1 \leq \sin x \leq 1$  to jednačina nema rješenja ..... 1 bod

17.



Presječna tačka pravih je rješenje sistema jednačina  $\begin{cases} y = -x + 2 \\ y = -3x - 4 \end{cases}$  ..... 1 bod

Traži se površina trougla čija su tjemena tačke:  $(1,1), (0,2), (0,4)$  ..... 1 bod

$P = 1$  ..... 1 bod

18.

$V_V = 12V_L$  ..... 1 bod

$r_V^2 \pi 2r_V = 12 \cdot \frac{4}{3} r_L^3 \pi \Rightarrow r_V^3 = 8r_L^3 \Rightarrow r_V = 2r_L$  ..... 1 bod

$P_V = 2B + M = 2r^2 \pi + 2r \pi H = 2r^2 \pi + 2r \pi 2r = 6r_V^2 \pi$  ..... 1 bod

$P_l = 4r_l^2 \pi \quad P_v = 24r_l^2 \pi$  ..... 1 bod

$\frac{P_V}{12P_L} = \frac{24r_l^2 \pi}{12 \cdot 4r_l^2 \pi} = \frac{1}{2}$  ..... 1 bod

19.

Centar kružnice:  $C\left(\frac{-3+5}{2}, \frac{-2+2}{2}\right)$ , tj.  $C(1,0)$  ..... 1 bod

Određivanje poluprečnika, npr.  $r = d(C, B) = \sqrt{(5-1)^2 + (2-0)^2} \Rightarrow r = \sqrt{20}$  .. 1 bod

$(x-1)^2 + y^2 = 20$  ..... 1 bod

**20.**

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

$$F'(4) = \frac{f'(4) \cdot g(4) - g'(4) \cdot f(4)}{g^2(4)} = -\frac{19}{16} \dots\dots\dots 1 \text{ bod}$$