UPUTSTVO ZA OCJENJIVANJE

MATURSKI/STRUČNI ISPIT – MATEMATIKA (VIŠI NIVO)

19. MAJ 2021. GODINA

Rješenja zadataka višestrukog izbora

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

11.

$x \neq \pm 1$ ..... 1 bod

$\frac{-(x+1)+2(x-1)+3}{(x-1)(x+1)} =$ ..... 1 bod

$\frac{x}{(x-1)(x+1)}$ ..... 1 bod

12.

$\frac{x}{100}1200 = 360$ ili $\frac{x}{100}1200 = 840$ ..... 1 bod

Neoštećenih čaša: 70% ..... 1 bod

13.

a) $z=3-i$ ..... 1 bod

$\frac{1}{z}=\frac{1}{3-i}\cdot\frac{3+i}{3+i}=\frac{3+i}{10}$ ..... 1 bod

b) $i^{2021}=i$ ili $|z|=\sqrt{3^2+(-1)^2}=\sqrt{10}$ ..... 1 bod

$i^{2021}|z|=i\sqrt{10}$ ..... 1 bod

14.

$x=-8, y=0\Rightarrow(m+2)\cdot(-8)+(m-5)=0$ ..... 1 bod

$m=-3$ ..... 1 bod

15.

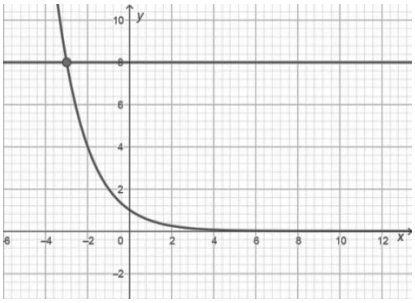
$x>0$ ..... 1 bod

$\log_7 x+\log_7 x=-\log_7 9$ ..... 1 bod

$\log_7 x^2=\log_7\frac{1}{9}\Rightarrow x^2=\frac{1}{9}$ ..... 1 bod

$x=\frac{1}{3}$ ..... 1 bod

16.



Skiciran grafik funkcije $f(x)=\left(\frac{1}{2}\right)^x$ ..... 1 bod

Skiciran grafik funkcije $g(x)=8$ ..... 1 bod

$\left(\frac{1}{2}\right)^x=8$ ..... 1 bod

$x=-3$, tačka presjeka: $(-3,8)$ ..... 1 bod

17.

I način :

$cos^2\alpha + sin^2\alpha = 1$ ..... 1 bod

$cos\alpha = \frac{p}{3}$, $sin\alpha = \frac{q}{2} \Rightarrow \left(\frac{p}{3}\right)^2 + \left(\frac{q}{2}\right)^2 = 1 \Rightarrow 4p^2 + 9q^2 = 36$ ..... 1 bod

II način :

$4p^2 + 9q^2 = 4\left(3\cos\alpha\right)^2 + 9\left(2\sin\alpha\right)^2$ ..... 1 bod

$4 \cdot 9 \cdot \cos^2\alpha + 9 \cdot 4 \cdot \sin^2\alpha = 36\left(\cos^2\alpha + \sin^2\alpha\right)$ ..... 1 bod

18.

a) $d = \left|\frac{Ax_0 + By_0 + C}{\sqrt{A^2 + B^2}}\right| = \left|\frac{3 \cdot 2 - 4 \cdot 5 + 4}{\sqrt{3^2 + (-4)^2}}\right| = \left|\frac{-10}{5}\right| = 2$ ..... 1 bod

b) $r = d = 2$ ..... 1 bod

$K : (x-2)^2 + (y-5)^2 = 4$ ..... 1 bod

19.

Kako tačke A i B nijesu sa iste strane $x-$ose, tražena tačka se dobija u presjeku prave AB i $x-$ose ..... 1 bod

$p_{AB} : y - (-3) = \frac{4-(-3)}{1-3}(x-3)$ ..... 1 bod

$p : y = -\frac{7}{2}x + \frac{15}{2}$ ..... 1 bod

$y = 0 \Rightarrow x = \frac{15}{7}, M\left(\frac{15}{7}, 0\right)$ ..... 1 bod

20.

I način:

ΔABO je jednakokraki pravougli trougao $\Rightarrow AB = r \wedge AO = r\sqrt{2}$ ..... 1 bod

$15 + r = r\sqrt{2}$ ..... 1 bod

$r = 15\left(\sqrt{2}+1\right)$ ..... 1 bod

II način:

$\sin 45^o = \dfrac{r}{r+15}$ ..... 1 bod

$\dfrac{\sqrt{2}}{2} = \dfrac{r}{r+15}$ ..... 1 bod

$r = \dfrac{15}{\sqrt{2}-1} = 15\left(\sqrt{2}+1\right)$ ..... 1 bod

21.

$\left(\cos\left(\pi - x\right)\right)' = \sin\left(\pi - x\right)$ ..... 1 bod

$f'(x) = 10cos(\pi - x)sin(\pi - x)$ ..... 1 bod

$f'\left(\dfrac{\pi}{2}\right) = 10\cos\dfrac{\pi}{2}\sin\dfrac{\pi}{2} = 0$ ..... 1 bod

22.

$\lim\limits_{x\to 16}\dfrac{\sqrt{x}-4}{x-16} = \lim\limits_{x\to 16}\dfrac{1}{\sqrt{x}+4}$ ..... 1 bod

$\lim\limits_{x\to 16}\dfrac{1}{\sqrt{x}+4} = \dfrac{1}{8}$ ..... 1 bod

23.

$6-2x = 3x+1, 6-2x \geq 0, \quad -\left(6-2x\right) = 3x+1, 6-2x < 0$ ..... 1 bod

$x = 1, 6-2x \geq 0$

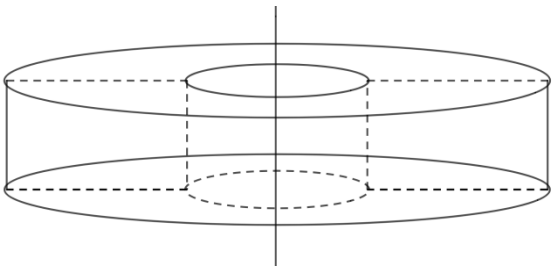
$x = -7, 6-2x < 0$ ..... 1 bod

$x = 1, x \leq 3$

$x = -7, x > 3$ ..... 1 bod

Rješenje: $x = 1$ ..... 1 bod

24.



$P = M_1 + M_2 + 2\left(B_1 - B_2\right)$ ..... 1 bod

$r_1 = 5 + 2,5 = 7,5cm$, $r_2 = 2,5cm$ ..... 1 bod

$H_1 = H_2 = H = 3cm$ ..... 1 bod

$P = 2 \cdot 7,5 \cdot \pi \cdot 3 + 2 \cdot 2,5 \cdot \pi \cdot 3 + 2\left(7,5^2 - 2,5^2\right)\pi = 160\pi cm^2$ ..... 1 bod

25.

$f\left(x\right) = \dfrac{9}{(x+5)(x^2-4)}$ ..... 1 bod

$x + 5 \neq 0 \wedge x^2 - 4 \neq 0$ ..... 1 bod

$x \neq -5 \ \wedge \ x \neq \pm 2$ ..... 1 bod

26.

Broj rasporeda žena na prvih osam mjesta jednak broju permutacija skupa od 8 elemenata, odnosno 8!, a toliko je i načina da se rasporede muškarci na posljednjih 8 mjesta..... 1 bod

Koristeći pravilo proizvoda, dobijamo da je traženi broj rasporeda jednak $8! \cdot 8!$ ..... 1 bod