MATURSKI/STRUČNI ISPIT

JUN 2026. GODINA

MATEMATIKA (VIŠI NIVO)

UPUTSTVO ZA OCJENJIVANJE

Rješenja zadataka višestrukog izbora

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

11.

$a^2+5a+6=(a+2)(a+3)$ ..... 1 bod

$\frac{a-2}{a^2+5a+6}-\frac{5}{a+3}=\frac{a-2-5(a+2)}{(a+2)(a+3)}=\frac{-4a-12}{(a+2)(a+3)}$ ..... 1 bod

$\frac{-4a-12}{(a+2)(a+3)}=\frac{-4(a+3)}{(a+2)(a+3)}=\frac{-4}{a+2}, a\neq -2\wedge a\neq -3$ ..... 1 bod

12.

$x-$ Slavkova zarada

$\frac{15}{100}\cdot 30=\frac{3}{100}x$ ..... 1 bod

$x=150$ ..... 1 bod

13.

Postavljen uslov $D<0$ ..... 1 bod

$D=24-4m$ ..... 1 bod

$m\in(6,+\infty)$ ..... 1 bod

14.

$5^x + 3\cdot 5^{x-2} = 140 \Rightarrow 25\cdot 5^x + 3\cdot 5^x = 25\cdot 140$ ..... 1 bod

$28\cdot 5^x = 25\cdot 140 \Rightarrow 5^x = 125$ ..... 1 bod

$5^x = 5^3 \Rightarrow x = 3$ ..... 1 bod

15.

$P_1 + P_2 = 337 \Rightarrow (25-x)^2 + x^2 = 337$ ..... 1 bod

$x^2 - 25x + 144 = 0 \Rightarrow x_1 = 9,\ x_2 = 16 \Rightarrow x = 9$ jer je $AC < CB$ ..... 1 bod

$O(x) = 4x + 4(25-x) - 2x = 100 - 2x$ ..... 1 bod

$O(9) = 82$ ..... 1 bod

16.

$\cos\left(x - \frac{\pi}{3}\right) = \frac{\sqrt{2}}{2}$ ..... 1 bod

$x - \frac{\pi}{3} = \frac{\pi}{4} + 2k\pi \quad \vee \quad x - \frac{\pi}{3} = -\frac{\pi}{4} + 2k\pi$ ..... 1 +1 bod

$x = \frac{7\pi}{12} + 2k\pi \quad \vee \quad x = \frac{\pi}{12} + 2k\pi$ ..... 1 bod

17.

Neka su stranice trogla $a = 5\,cm, b = 6\,cm, c = 9\,cm$ i R polupreč nik kružnice opisane oko trougla.

Primjenom Heronovog obrasca

$P_\Delta = \sqrt{s(s-a)(s-b)(s-c)}, s = \frac{a+b+c}{2} \Rightarrow P_\Delta = 10\sqrt{2}cm^2$ ..... 1 bod

$P_\Delta = \frac{abc}{4R} \Rightarrow R = \frac{abc}{4P_\Delta} = \frac{27\sqrt{2}}{8}cm$ ..... 1 bod

18.

$H = 2r - 1$ ..... 1 bod

$P = 2r\pi(r + H) \Rightarrow 8\pi = 2r\pi(r + 2r - 1) \Rightarrow 3r^2 - r - 4 = 0$ .....1 bod

$r_1 = -1, r_2 = \frac{4}{3}$ pa je polupreč nik osnove valjka $r = \frac{4}{3}cm$ ..... 1 bod

$V = r^2\pi H = \frac{16}{9}\pi\left(\frac{8}{3} - 1\right)cm^3 = \frac{80\pi}{27}cm^3$ ..... 1 bod

19.

Središte duži AB: $M(4,3)$ ..... 1 bod

$y=-\frac{4}{3}x+3 \Rightarrow 4x+3y-9=0$

$d(M,p)=\left|\frac{Ax_0+By_0+C}{\sqrt{A^2+B^2}}\right|=\left|\frac{4\cdot 4+3\cdot 3-9}{\sqrt{4^2+3^2}}\right|$ ..... 1 bod

$d(M,p)=\frac{16}{5}$ ..... 1 bod

20.

$2c=2b=12\sqrt{2} \Rightarrow c=b=6\sqrt{2}$ ..... 1 bod

$a^2=c^2+b^2 \Rightarrow a=12$ ..... 1 bod

$\varepsilon: \frac{x^2}{144}+\frac{y^2}{72}=1$ ili $x^2+2y^2=144$ ..... 1 bod

21.

Kosa asimptota: $y=kx+n$

$k=\lim\limits_{x\to\infty}\frac{f(x)}{x}$, $n=\lim\limits_{x\to\infty}\left(f(x)-kx\right)$ ..... 1 bod

$k=\lim\limits_{x\to\infty}\frac{x^2-5x}{x^2-3x}=1$ ili $n=\lim\limits_{x\to\infty}\left(\frac{x^2-5x}{x-3}-x\right)=\lim\limits_{x\to\infty}\frac{-2x}{x-3}=-2$ ..... 1 bod

$y=x-2$ ..... 1 bod

22.

$\lim\limits_{x\to 2}\frac{\frac{2}{x}-1}{x-2}=\lim\limits_{x\to 2}\frac{2-x}{x(x-2)}$ ..... 1 bod

$=-\frac{1}{2}$ ..... 1 bod

23.

$\sqrt{1350\cdot n}=\sqrt{2\cdot 3\cdot 3\cdot 3\cdot 5\cdot 5\cdot n}$ ..... 1 bod

$n=2\cdot 3$ jer je $\sqrt{1350\cdot n}=\sqrt{2\cdot 3\cdot 3\cdot 3\cdot 5\cdot 5\cdot 2\cdot 3}=2\cdot 3\cdot 3\cdot 5=90$ ..... 1 bod

24.

$5\log^2 x - 7\log x + 2 = 0$ ..... 1 bod

$t = \log x \Rightarrow 5t^2 - 7t + 2 = 0$ ..... 1 bod

$\log x = 1 \vee \log x = \frac{2}{5}$ ..... 1 bod

$x = 10$ ili $x = \sqrt[5]{100}$ ..... 1 bod

25.

$y' = \frac{2x}{3}$ ..... 1 bod

$y'' = \frac{2}{3}$ ..... 1 bod

$3\left(\frac{2x}{3}\right)^2 + 4 \cdot \frac{2}{3} - 4\frac{2+x^2}{3} = \frac{4x^2}{3} + \frac{8}{3} - \frac{4x^2}{3} - \frac{8}{3} = 0$ ..... 1 bod

26.

Mogućih ishoda ima $\binom{30}{2}$ (sve 2-kombinacije skupa od 30 elemenata) ..... 1 bod

Povoljne 2-kombinacije su oblika $\{i, i+1\}$, $i = 1, 2, ..., 29$ i ima ih 29 ..... 1 bod

$p = \frac{29}{\binom{30}{2}} = \frac{29}{15 \cdot 29} = \frac{1}{15}$ ..... 1 bod