Vertinimo instrukcija

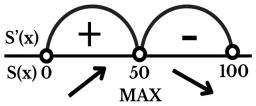
Bendrasis kursas

I DALIS

1.	2
2.	4
3.	6
4.	$5\sqrt[4]{5}$
5.	6067
6.	6
7.	$x \in (-2; 0)$
8.	32%
9.	240
10.	2450

II DALIS

11.1	$x^2 + 9 \neq 0 \Rightarrow x^2 \neq -9 \Rightarrow x \in \mathbb{R}$	1 taškas
	$2x^2 + 6x = 0 \Rightarrow 2x(x+3) = 0 \Rightarrow$ Ats.: $x_1 = 0; x_2 = -3$	1 taškas
11.2	$0 = \lg 1 \Rightarrow \lg(x) + \lg(2+3x) = \lg 1$	1 taškas
	$\lg(x(2+3x)) = \lg 1$	1 taškas
	$x(2+3x) = 1 \Rightarrow 3x^2 + 2x - 1 = 0 \Rightarrow D = 16 \Rightarrow x_1 = \frac{1}{3}; x_2 = -1$	1 taškas
	$\begin{cases} x > 0 \\ 2 + 3x > 0 \end{cases} \Rightarrow x \in (0; \infty)$ $\Rightarrow Ats. : x = \frac{1}{3}$	1 taškas
11.3	$x + 2025 \cdot 180^\circ = 360^\circ k; k \in \mathbb{Z}$	1 taškas
	Ats.: $x = -2025 \cdot 180^\circ + 360^\circ k; k \in \mathbb{Z}$	1 taškas
12.1	$P(7) = 6^{7+1} + 35 \cdot 6^{7-1} = 3312576$ Eur	1 taškas
12.2	$6^{t+1} + 35 \cdot 6^{t-1} = 2556$	1 taškas
	$6^{t-1}(6^2 + 35) = 2556 \Rightarrow 71 \cdot 6^{t-1} = 2556 \Rightarrow 6^{t-1} = 36 \Rightarrow t = 3$	1 taškas
	Ats.: $3 : 60 = \frac{1}{20} = 0,05$ val.	1 taškas

13.	Nuo 1 iki 9 pusl.: 9 skaitmenys	1 taškas
	Nuo 10 iki 99 pusl.: $(99-10)+1)\cdot 2 = 180$ skaitmenų	1 taškas
	Nuo 100 iki 192 pusl.: $(192-100)+1)\cdot 3 = 279$ skaitmenys	1 taškas
	Ats.: $9+180+279 = 468$ skaitmenys	1 taškas
14.1	$c\sqrt{b} = 2^{2020}\sqrt{2^{2024}} = 2^{2020}(2^{2024})^{\frac{1}{2}} = 2^{2020+1012} = 2^{3032}$	1 taškas
14.2	$\lvert c-a\rvert = \lvert 2^{2020}-2^{2025}\rvert = \lvert 2^{2020}(1-2^5)\rvert = \lvert -31\cdot 2^{2020}\rvert = 31\cdot 2^{2020}$	1 taškas
	$\lvert d-b\rvert = \lvert 2^{2019}-2^{2024}\rvert = \lvert 2^{2019}(1-2^5)\rvert = \lvert -31\cdot 2^{2019}\rvert = 31\cdot 2^{2019}$	1 taškas
	Ats.: $\lvert c-a\rvert : \lvert d-b\rvert = (31\cdot 2^{2020}) : (31\cdot 2^{2019}) = 2^{2020-2019} = 2$	1 taškas
14.3	$\log_4 2^{2025\cdot 3} - \log_4 2^{2020} = \log_4 \frac{2^{6075}}{2^{2020}} = \log_4 2^{4055}$	1 taškas
	$\log_4 2^{4055} = \log_{2^2} 2^{4055} = \frac{1}{2}\log_2 2^{4055} = \log_2 2^{\frac{4055}{2}} = \frac{4055}{2}$	1 taškas
	$\sqrt[2024]{b} = \sqrt[2024]{2^{2024}} = \lvert 2\rvert = 2$	1 taškas
	Ats.: $3\log_4(a) - \log_4(c) + (\sqrt[2024]{b})^{-1} = \frac{4055}{2} + 2^{-1} = \frac{4056}{2} = 2028$	1 taškas
14.4	$2\sqrt{\log_4 2} = 2\sqrt{\log_{2^2} 2} = 2\sqrt{\frac{1}{2}\log_2 2} = 2\sqrt{\frac{1}{2}}$	1 taškas
	$2\cdot\frac{1}{\sqrt{2}} = \frac{2\sqrt{2}}{\sqrt{2}\cdot\sqrt{2}} = \frac{2\sqrt{2}}{2} = \sqrt{2}$	1 taškas
	$2^{2025} > 1$, todėl $0 < \frac{1}{2^{2025}} < \frac{1}{2} \Rightarrow 2^{\frac{1}{2^{2025}}} < 2^{\frac{1}{2}} \Rightarrow$ Ats.: $2^{\frac{1}{a}} < 2\sqrt{\log_4 2}$	1 taškas
15.1	$l = \frac{2\pi R}{360^\circ}\cdot\alpha = \frac{2\pi x}{360^\circ}\cdot\alpha$	1 taškas
	$P = 2x + \frac{2\pi x}{360^\circ}\cdot\alpha = 200$	1 taškas
	$\frac{2\pi x}{360^\circ}\cdot\alpha = 200-2x \Rightarrow \alpha = \frac{36000-360x}{\pi x}$	1 taškas
	$S(x) = \frac{\pi R^2}{360^\circ}\cdot\alpha = \frac{\pi x^2}{360^\circ}\cdot\frac{36000-360x}{\pi x} = x(100-x)$	1 taškas
15.2	$S'(x) = 100-2x$	1 taškas
	$S'(x) = 0 \Rightarrow 100-2x = 0 \Rightarrow x = 50$	1 taškas
		1 taškas
	Ats.: $S(50) = 100\cdot 50 - 50^2 = 2500$ cm^2	1 taškas
16.1	$r = 10:2 = 5$ cm	1 taškas
	$2Hr\pi = 100\pi \Rightarrow 2H\cdot 5\pi = 100\pi$	1 taškas
	$2H\cdot 5\pi = 100\pi \Rightarrow H = 10$cm	1 taškas
	Ats.: $S_{ABCD} = AD\cdot BA = 10\cdot 10 = 100$ cm^2	1 taškas

16.2	$tg(\angle CAD) = \frac{CD}{AD} \Rightarrow tg(\angle CAD) = 1$	1 taškas
	Ats.: $\angle CAD = 45^\circ$	1 taškas
16.3	$S_{pagr.} = \pi r^2 = \pi \cdot 5^2 = 25\pi$ cm^2	1 taškas
	Ats.: $V = S_{pagr.} \cdot H = 25\pi \cdot 10 = 250\pi$ cm^3	1 taškas
17	$b_1 = \frac{4^2\sqrt{3}}{4} = 4\sqrt{3}$	1 taškas
	$b_2 = \frac{2^2\sqrt{3}}{4} = \sqrt{3} \Rightarrow q = \frac{b_2}{b_1} = \frac{\sqrt{3}}{4\sqrt{3}} = \frac{1}{4}$	1 taškas
	Ats.: $S_5 = \frac{b_1(1-q^5)}{1-q} = \frac{4\sqrt{3}(1-(\frac{1}{4})^5)}{1-\frac{1}{4}} = \frac{341\sqrt{3}}{64}$	1 taškas
18	Tikimybė gauti bet kurį staliuką : $1 - 0,6 = 0,4$	1 taškas
	Tikimybė gauti VIP staliuką: $\frac{1}{3} \cdot 0,4 = \frac{2}{15}$	1 taškas
	Tikimybė gauti VIP klasės staliuką prie lango: $\frac{1}{4}$	1 taškas
	A - Ignas gaus VIP staliuką prie lango. Ats.: $P(A) = \frac{2}{15} \cdot \frac{1}{4} = \frac{1}{30}$	1 taškas