

Baganne 1.

Dane: $(1, 2), (3, 10), (5, 1)$

Funkcja: $y = f(x)$

Treść zadania:

$$y = ax^2 + bx + c$$

$$\begin{cases} a+b+c=2, \\ 9a+3b+c=10, \\ 25a+5b+c=4; \end{cases} \Rightarrow \begin{cases} a+b+c=2, \\ 8a+2b=8, \\ 24a+4b=-1; \end{cases} \Rightarrow$$

$$\begin{cases} a+b+c=2, \\ b=4-4a, \\ 24a+16-16a=-1; \end{cases} \Rightarrow \begin{cases} c=2-a-b, \\ b=4-4a, \\ 8a=-1; \end{cases} \Rightarrow$$

$$\begin{cases} c=2-a-\frac{1}{8}, \\ b=4+\frac{1}{4}a, \\ a=-\frac{1}{8}; \end{cases} \Rightarrow$$

$$\begin{cases} c=2-\frac{1}{8}-\frac{1}{8}, \\ b=4+\frac{1}{4}\cdot\frac{1}{8}, \\ a=-\frac{1}{8}; \end{cases} \Rightarrow$$

$$\begin{cases} c=2-\frac{1}{4}, \\ b=\frac{15}{8}, \\ a=-\frac{1}{8}; \end{cases} \Rightarrow$$

$$\begin{cases} a=-2, \\ b=12, \\ c=2+2,125; \end{cases}$$

$$y = -2x^2 + 12x + 2,125 = -8x^2 + 37,5$$

$$\text{Obrót: } y = -2,125x^2 + 12,5x - 8,375.$$

Baganne 2.

Dane: mch = 100 kr, clogon = 99%, clogon = 98%

Funkcja: Myc.

Treść zadania:

- 1) $100 \cdot (1 - 0,99) = 1 \text{ (kr)} - \text{czyli 100 kr zbiernik oznaków}$
- 2) $1 : (1 - 0,98) = 50 \text{ (kr)} - \text{na 100 zbierników oznaków.}$

Obrót: 50 kr.

Baganne 3.

$$1) 2^x = 256; \quad 2) 2^x = 300;$$

$$\begin{aligned} x &= \log_2 256; & x &= \log_2 300; \\ x &= \log_2 2^8; & x &= \log_2 4 + \log_2 75; \\ x &= 8. & x &= 2 + \log_2 75. \end{aligned}$$

$$\begin{aligned} 3) \log_8 2^{8x-4} &= 4; & 4) 3 \log_9 (5x-5) &= 5; \\ (8x-4) \log_8 2 &= 4; & (5x-5) \log_3 3 &= 5; \\ (8x-4) \log_3 2 &= 4; & (5x-5) \cdot \frac{x}{x} &= 5; \\ (8x-4) \cdot \frac{1}{3} &= 4; & \text{Dla } 3: 5x-5 > 0, \text{ t.e. } x > 1. \\ 8x-5 &= 25; & 5x-5 &= 25; \\ 8x &= 12+4; & 5x &= 30; \\ 8x &= 16; & x &= 6. \end{aligned}$$

$$\begin{aligned} \text{Dla } 2: & \log_3 x = t, \text{ moga} \\ & \log_3 x^2 + t - 2 = 0; \\ & \log_3 x \log_3 x + 1 = \log_3 3^2 \\ & (\log_3 x + 1)(\log_3 x - 1) = 2; \\ & \log_3 x + \log_3 x - 2 = 0; \\ & 2\log_3 x - 2 = 0; \\ & \log_3 x = 1; \\ & \log_3 x = -2, \quad \Rightarrow \begin{cases} x_1 = 3^{-2} = \frac{1}{9}, \\ x_2 = 3. \end{cases} \\ & \text{Dla } 3: x > 0 \end{aligned}$$

$$\begin{aligned} 5) \log_3 x + 4 &= 9; \\ \log_3 x \log_3 x + 1 &= \log_3 3^2 \\ (\log_3 x + 1)(\log_3 x - 1) &= 2; \\ \log_3 x + \log_3 x - 2 &= 0; \\ & 2\log_3 x - 2 = 0; \\ & \log_3 x = 1; \\ & \log_3 x = -2, \quad \Rightarrow \begin{cases} x_1 = 3^{-2} = \frac{1}{9}, \\ x_2 = 3. \end{cases} \end{aligned}$$

Zadanie 4.

$$\begin{aligned} 6) \log_4 16 &= 2; \\ 7) \log_{25} \frac{1}{25} &= \log_{25} 2^{-2} = -2; \\ 8) \log_{12} 5 &= \log_{12} 5 = \frac{1}{2} \log_{12} 5 = 0,5; \\ 9) \log_3 \sqrt{27} &= \log_3 (3^3)^{0,5} = \log_3 3^{1,5} = 1,5; \\ 10) \log_2 12 - \log_2 3 &= \log_2 \frac{12}{3} = \log_2 4 = 2; \\ 11) \log_6 12 + \log_6 3 = \log_6 36 &= 2; \\ 12) e^{ln 5} &= 5. \end{aligned}$$

$$\begin{aligned} 13) \log_{15} 225 &= \log_{15} 15^2 = 2; \\ 14) \log_4 32 + \log_{0,1} 10 &= \log_2 2^5 + \log_{10} 10 = \frac{5}{2} - 1 = 1,5; \\ 15) 9 \log_3 \sqrt{5} &= 9 \sqrt{5} \log_3 5 = \sqrt{5}^2 = 5. \end{aligned}$$