

$$(4) \log_4 16 = 2$$

$$7) \log_5 \frac{1}{25} = -2$$

$$8) \log_{25} 5 = \frac{1}{2}$$

$$9) \log_3 \sqrt{27} = \log_3 3^{\frac{3}{2}} = \frac{3}{2} \log_3 3 = \underline{\underline{\frac{3}{2}}}$$

$$10) \log_2 12 - \log_2 3 = \log_2 \frac{12}{3} = \log_2 4 = \underline{\underline{2}}$$

$$11) \log_6 12 + \log_6 3 = \log_6 (12 \cdot 3) = \log_6 36 = 2$$

$$12) e^{\ln 5} = 5$$

$$13) \frac{\log_2 225}{\log_2 15} = \frac{\log_2 15^2}{\log_2 15} = 2 \frac{\log_2 15}{\log_2 15} = \underline{\underline{2}}$$

$$14) \log_4 32 + \log_{0.1} 10 = \frac{5}{2} \log_2 2^2 - 1 \cdot \log_{10} 10 \Rightarrow$$

$$\Rightarrow \frac{5}{2} - 1 = \underline{\underline{\frac{3}{2}}}$$

$$15) 9^{\log_3 \sqrt{5}} = 3^2 \log_3 5^{\frac{1}{2}} = 3^{2 \cdot \frac{1}{2} \log_3 5} = \underline{\underline{5}}$$

Before (2)

$$1) \begin{matrix} 100 \text{ kr} & - & 100\% \\ X \text{ kr} & - & 1\% \end{matrix} \Rightarrow x = 1 \text{ kr} - \text{bec} \\ \text{у } x \text{oro бeнзeмбa} \\ \text{oуппyсeб}$$

$$2) \begin{matrix} 1 \text{ kr} & - & 2\% \\ X \text{ kr} & - & 100\% \end{matrix} \Rightarrow x = \frac{100 \cdot 1}{2} = \text{50 kr} \\ \text{Oтвeт}$$

(3)

$$1) 2^x = 256 \Rightarrow x = \log_2 256 = \underline{\underline{8}}$$

$$2) 2^x = 300 \Rightarrow x = \frac{\log_2 300}{\log_2 2}$$

$$3) \log_8 2^{(8x-4)} = 4 \Rightarrow \frac{1}{3} \log_2 2^{(8x-4)} = 4 \Rightarrow \\ \Rightarrow \frac{8x-4}{3} = 4 \Rightarrow \underline{\underline{x=2}}$$

$$4) {}_3 \log_9 (5x-5) = 5$$

$${}_3 \log_3 (5x-5) = 5 \Rightarrow 3^{\frac{1}{2} \log_3 (5x-5)} = 5 \Rightarrow$$

$$\Rightarrow {}_3 \log_3 (5x-5)^{1/2} = 5 \Rightarrow (5x-5)^{1/2} = 5$$

$$5x-5 = 25$$

$$\underline{\underline{x=6}}$$

$$6) x^{\log_3 x + 1} = 9$$

$$\log_3 (x^{\log_3 x + 1}) = \log_3 9$$

$$(\log_3 x + 1) \cdot \log_3 x = 2$$

$$(t+1)t = 2$$

$$t^2 + t - 2 = 0 \Rightarrow \begin{matrix} t_1 = -2 \\ t_2 = 1 \end{matrix}$$

$$\log_3 x = t$$

$$\log_3 x = -2$$

$$x = 1/9$$

$$\log_3 x = 1$$

$$x = 3$$

$$\text{Oтвeт: } \frac{1}{9}; 3$$

1. Уравнение параболы

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

$$\begin{cases} 25a + 5b + c = 1 \\ 9a + 3b + c = 10 \\ a + b + c = 1 \end{cases}$$

Методом Гаусса

$$\left[\begin{array}{ccc|c} 25 & 5 & 1 & 1 \\ 9 & 3 & 1 & 10 \\ 1 & 1 & 1 & 1 \end{array} \right] \begin{array}{l} \times -\frac{1}{9} \\ \\ \leftarrow + \end{array} \Rightarrow \left[\begin{array}{ccc|c} 25 & 5 & 1 & 1 \\ 9 & 3 & 1 & 10 \\ 0 & \frac{2}{3} & \frac{8}{9} & \frac{8}{9} \end{array} \right] \begin{array}{l} \times -\frac{9}{25} \\ \\ \leftarrow + \end{array}$$

$$\Rightarrow \left[\begin{array}{ccc|c} 25 & 5 & 1 & 1 \\ 0 & \frac{8}{5} & \frac{16}{25} & \frac{241}{25} \\ 0 & \frac{2}{3} & \frac{8}{9} & \frac{8}{9} \end{array} \right] \begin{array}{l} \times -\frac{5}{8} \\ \\ \leftarrow + \end{array} \Rightarrow \left[\begin{array}{ccc|c} 25 & 5 & 1 & 1 \\ 0 & \frac{8}{5} & \frac{16}{25} & \frac{241}{25} \\ 0 & 0 & \frac{8}{15} & -\frac{67}{15} \end{array} \right]$$

$$\Rightarrow \left[\begin{array}{ccc|c} 1 & 1/5 & 1/25 & 1/25 \\ 0 & 1 & 8/15 & 241/30 \\ 0 & 0 & 1 & -67/8 \end{array} \right] \Rightarrow$$

$$c = -\frac{67}{8}$$

$$b = \frac{25}{2}$$

$$a = \frac{17}{8}$$

Уравнение: $y = -\frac{17}{8}x^2 + \frac{25}{2}x - \frac{67}{8}$