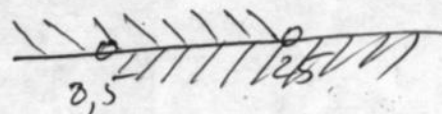


$$1) \begin{cases} 10x - 5 - 9x - 18 - 2 < 0 & x < 25 \\ 2x > 17. & \Leftrightarrow x > 8,5 \end{cases}$$



Ответ: $x \in (8,5; 25)$

$$2) \sqrt{10 \cdot 20} + \sqrt{5 \cdot 20} - 5\sqrt{2 \cdot 4} = 10\sqrt{2} + 2 \cdot 5 - 10\sqrt{2} = 10$$

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

$$4) \text{ Пусть } v_p = v_T + 50$$

$$\frac{210}{v_T} - \frac{210}{v_p} = 7,5 = \frac{75}{10} = \frac{15}{2}$$

$$\frac{210}{v_T} - \frac{210}{v_T + 50} = \frac{15}{2} \Rightarrow \frac{210 \cdot 2}{v_T(v_T + 50)} = \frac{15}{2}$$

$$420v_T + 420 \cdot 50 - 420v_T^2 - 15v_T^2 - 15v_T \cdot 50 = 0 \quad | : (-15)$$

$$v_T^2 + 50v_T - 1400 = 0$$

$$D_4 = 625 + 1400 = 2025 = 45^2$$

$$v_T = \frac{-25 + 45}{2} = 10 \text{ км/ч. (отриц.)}$$

$$v_p = 10 + 50 = 60 \text{ км/ч.}$$

$$5) \text{ Пусть } \frac{6-x}{5} - 2 < 0 \Rightarrow \frac{6-x}{5} < 2$$

$$\frac{6-x}{5} < 2 \Leftrightarrow 6-x < 10 \Rightarrow x > -4$$

Ответ: $x > -4$

$$\text{Пусть } \frac{x^2+1}{x} = t \Rightarrow t + \frac{1}{t} = -\frac{5}{2} \quad \text{ОДЗ: } t \neq 0$$

$$t^2 + \frac{5}{2}t + 1 = 0 \quad | \cdot 2$$

$$2t^2 + 5t + 2 = 0$$

$$D = 25 - 4 \cdot 2 \cdot 2 = 9 = 3^2$$

$$t_1 = \frac{-5-3}{4} = -2 \Rightarrow \frac{x^2+1}{x} = -2$$

$$t_2 = \frac{-5+3}{4} = -\frac{1}{2} \Rightarrow \frac{x^2+1}{x} = -\frac{1}{2}$$

$$\frac{x^2+1}{x} = -\frac{1}{2} \Rightarrow 2x^2+2 = -x$$

$$2x^2+x+2=0$$

$$D = 1 - 4 \cdot 2 \cdot 2 < 0 \text{ — нет корней.}$$

Ответ: $x = -1$