

Шифр 50

Внесите в таблицу номера правильных ответов. В заданиях, в которых отсутствуют варианты ответов, внесите правильный ответ.

1	2	3	4	5	6	7	8	9	10
2	5	5	2	4	2	1	3	3	4
+	+	+	+	+	+	+	+	+	-

11	12	13	14	15	16	17	18	19	20
4	2	3	5	2	4	2	4	2	2
-	-	-	-	-	+	-	-	+	-

(18) $(0,6)^{x^2} \cdot (1,5)^{-x^2} = (0,4)^{2x+1}$; $\frac{(0,6)^{x^2} \cdot (1,5)^{-x^2}}{(0,4)^{2x+1}} = 1 \Rightarrow$

$\frac{(0,6)^{x^2}}{(1,5)^{x^2}}$

(19) $\left(\text{ctg} \frac{5}{4}\right)^{\frac{2x-3}{x-1}} \geq \left(\text{ctg} \frac{5}{4}\right)^{\frac{2}{3-x}}$ og 7 $\begin{matrix} x \neq 1 \\ x \neq 43 \end{matrix}$

$\frac{\left(\text{ctg} \frac{5}{4}\right)^{\frac{2x-3}{x-1}}}{\left(\text{ctg} \frac{5}{4}\right)^{\frac{2}{3-x}}} \geq 1$

$\frac{2x-3}{x-1} - \frac{2}{3-x} = \frac{(2x-3)(3-x) - 2x+6}{(x-1)(3-x)} = \frac{2x^2-9x+9-2x+6}{(x-1)(3-x)}$

$\frac{2x^2-11x+15}{(x-1)(3-x)}$

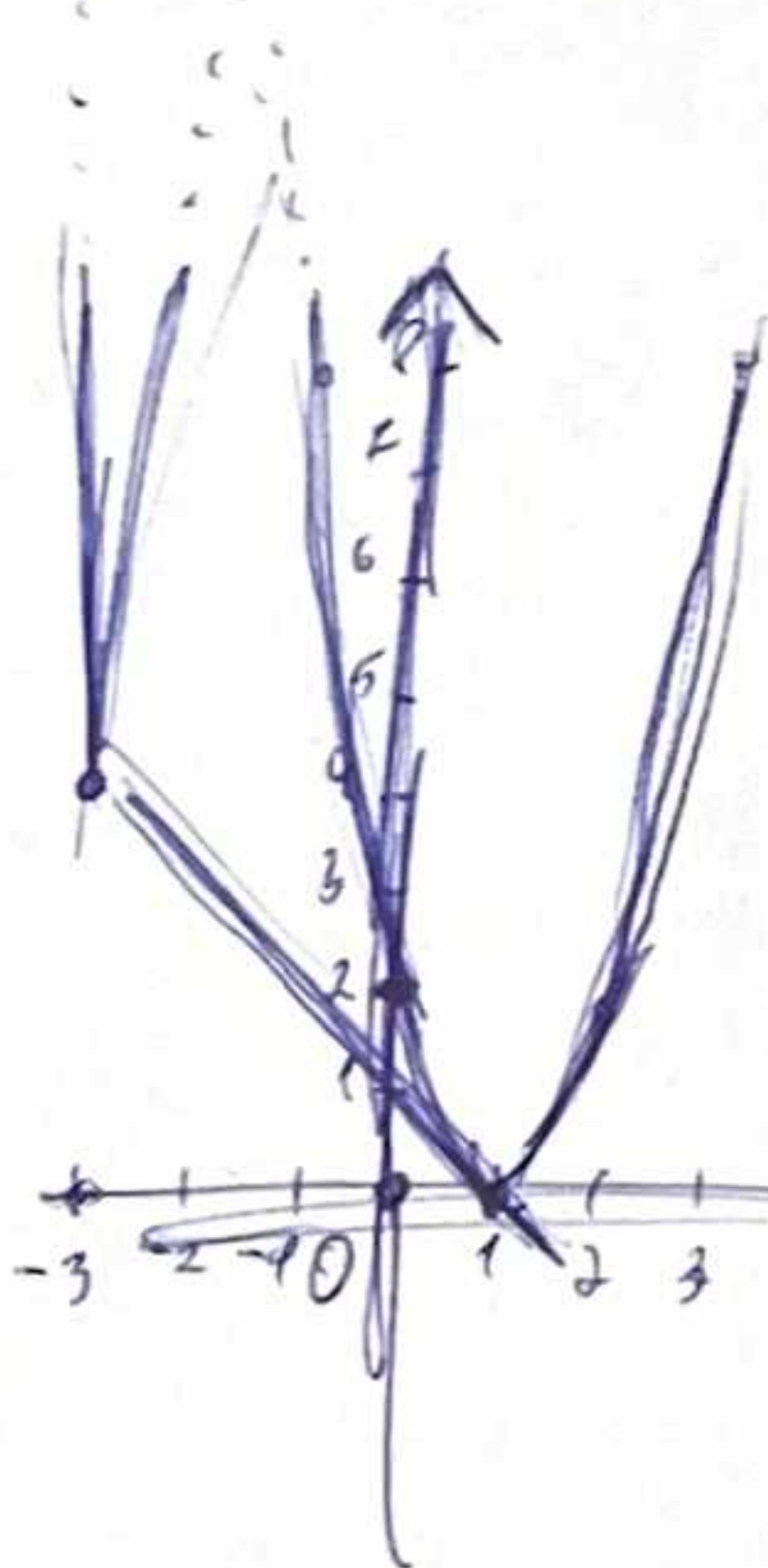
$2x^2 - 11x + 15 = 0$
 $x^2 - 9x + 9 = 0$

$D = 81 - 36 = 45$

$x_1 = \frac{9-3\sqrt{5}}{2}$; $x_2 = \frac{9+3\sqrt{5}}{2}$

$x \in \left[\frac{9-3\sqrt{5}}{2}, \frac{9+3\sqrt{5}}{2}\right]$

(20) $f(x) = 2x^2 - 4x + 2$



(21) $2\sqrt{2x^2 - 16x + 8} = 0$
 $D = 256 - 128 = 128$

(22) $\begin{cases} 4ax + 9y = -27 \\ x + 4ay = 16a^2 \end{cases}$

$4ax + 9y = -27 - 16a^2$
 $x = 16a^2 - 4ay$

$4a(16a^2 - 4ay) + 9y = -27$

$64a^3 - 16a^2y + 9y = -27$

50 - 100%

x - 60%

20 - 10%

x - 20%

$x \in \left[\frac{9-3\sqrt{5}}{2}, \frac{9+3\sqrt{5}}{2}\right]$

$\frac{50 \cdot 60}{100} = 30$ (km) - cars

20 (km) - bags

$\frac{10 \cdot 20}{10} = 20$ (km) - 30 = 750 (km) cars

ЛИСТ ОТВЕТА

7) $x^2/|x|=3$

$x > 0$

$x^2 + x - 3 = 0$

$D = 1 + 12 = 13$

$x_1 = \frac{-1 - \sqrt{13}}{2}$; $x_2 = \frac{-1 + \sqrt{13}}{2}$

$x < 0$

$x^2 - x - 3 = 0$

$D = 1 + 12 = 13$

$x_1 = \frac{1 - \sqrt{13}}{2}$; $x_2 = \frac{1 + \sqrt{13}}{2}$

$\frac{-1 - \sqrt{13}}{2} - \frac{1 + \sqrt{13}}{2} = \frac{-1 - \sqrt{13} - 1 - \sqrt{13}}{2} = \frac{-2 - 2\sqrt{13}}{2} = -1 - \sqrt{13}$

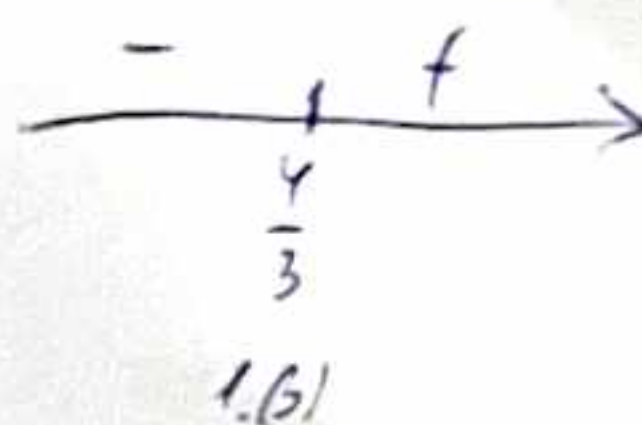
$\frac{1 + \sqrt{13} + 1 + \sqrt{13}}{2} = \frac{2 + 2\sqrt{13}}{2} = 1 + \sqrt{13} ???$

~~$1 + \sqrt{13}$~~

8) $|3x - 4| + 6 \leq 8$

$3x - 4 = 0$

$3x = 4$
 $x = \frac{4}{3}$



$x > \frac{4}{3}$

$x < \frac{4}{3}$

$3x - 4 + 6 \leq 8$

$-3x + 4 + 6 \leq 8$

$3x + 2 \leq 8$

$-3x + 10 \leq 8$

$3x \leq 6$

$-3x \leq -2$

$x \leq 2$

$3x \geq 2$

$x \geq \frac{2}{3}$

$1 + 2 \cdot 3 = 8$

$1 + 3 = 4$

9) $\sqrt{x-1} \sqrt{3x+1} = x+3$; $\sqrt{(x-1)(3x+1)} = x+3$; $(x-1)(3x+1) = x^2 + 6x + 9$

$3x^2 - 2x - 1 - x^2 - 6x - 9 = 0$

$2x^2 - 8x - 10 = 0$; $x^2 - 4x - 5 = 0$

$x_1 = \frac{4 - \sqrt{16 + 20}}{2} = 2 - \sqrt{6}$

$D = 16 + 20 = 36$

$x_2 = \frac{4 + \sqrt{36}}{2} = 2 + \sqrt{6}$

$D = 16 + 20 = 36$

$x_1 = \frac{4 - 6}{2} = -1$ no

$x_2 = \frac{4 + 6}{2} = 5$

$\frac{2x(x-1)}{x^2+5} =$

$\frac{2 \cdot 5(5-1)}{5^2+5} = \frac{2 \cdot 5 \cdot 4}{5(5+1)} = \frac{4}{3}$

$1 + 3 = 4$

+

ЛИСТ ОТВЕТА

$$\textcircled{3} \quad \frac{x(x-5)}{\frac{2}{x-14} - \frac{1}{x-11}} = \frac{24}{\frac{2}{x-14} + \frac{1}{11-x}}$$

$$x^2 - 5x - 24 = 0$$

$$D = 25 + 96 = 121$$

$$x_1 = \frac{5+11}{2} = 8, x_2 = \frac{5-11}{2} = -3$$

5?

11 2 11 5?

$$\frac{2}{x-14} - \frac{1}{x-11} \neq 0$$

$$x \neq 8 \Rightarrow -3$$

$$\frac{2x-22-x+14}{x-14x-11} = \frac{x-8}{x^2-25x+154}$$

$$3x-36 \neq 0$$

$$D = 225 - 4 \cdot 154 > 0$$

$$\textcircled{4} \quad \begin{cases} xy(x+y) = 6 \\ xy(x-y) = 2 \end{cases}$$

$$\frac{xy(x+y)}{xy(x-y)} = 3 \Rightarrow \frac{x+y}{x-y} = 3 \Rightarrow \frac{(x+y)(x-y)}{x^2-y^2} = 3 \Rightarrow \frac{x^2-y^2}{x^2-y^2} = 3 \Rightarrow x^2-y^2 = 3(x^2-y^2)$$

$$\begin{cases} x^2y + xy^2 = 6 \\ x^2y - xy^2 = 2 \end{cases}$$

$$x+y = 3(x-y)$$

$$x = 3x - 4y$$

$$2x = 4y$$

$$x = 2y$$

$$2x^2(x-2y) = 2$$

$$2x^2(1-x) = 2$$

$$-3x^3 = 2$$

$$2x^3 - 4x^3 = -2x^3$$

$$2y^2(2y-y) = 2$$

$$2y^3 = 2$$

$$y^3 = 1$$

$$y = 1 \quad x = 2$$

$$x \cdot y = 2 \quad || \sqrt[2]{}$$

$$\textcircled{5} \quad \frac{(x+1)^2 - 2x - 17}{(x+2)^2} \geq 0$$

$$(x+1)^2 - 2x - 17 \geq 0$$

$$x^2 + 2x + 1 - 2x - 17 \geq 0$$

$$x^2 - 16 \geq 0$$

$$(x-4)(x+4) \geq 0$$

$$x \geq 4 \quad x \geq -4$$

Ответ на _____ стр.



Подпись участника _____

$$\textcircled{1} \sqrt{31 + 8\sqrt{15}} (20 - 5\sqrt{15})$$

$$\sqrt{16 + 8\sqrt{15} + 15} (20 - 5\sqrt{15})$$

$$(4 + \sqrt{15})(20 - 5\sqrt{15}) = 5(4 + \sqrt{15})(4 - \sqrt{15}) = 5 \cdot (16 - 15) = \textcircled{5}$$

21

$$\textcircled{2} \frac{x\sqrt{x} - 8y\sqrt{y} - 6\sqrt{xy}(\sqrt{x} - 2\sqrt{y})}{\sqrt{x} - 2\sqrt{y}}$$

$$\begin{aligned} \sqrt{x} &= t; x = t^2 \\ \sqrt{y} &= n; y = n^2 \end{aligned}$$

$$xt - 8yn - 6$$

$$\frac{t^3 - 8n^3 - 6tn(t - 2n)}{t - 2n} = \frac{t^3 - 8n^3 - 6t^2n + 12tn^2}{t - 2n} = \frac{t^2(t - 6n) + 12tn^2}{t - 2n}$$

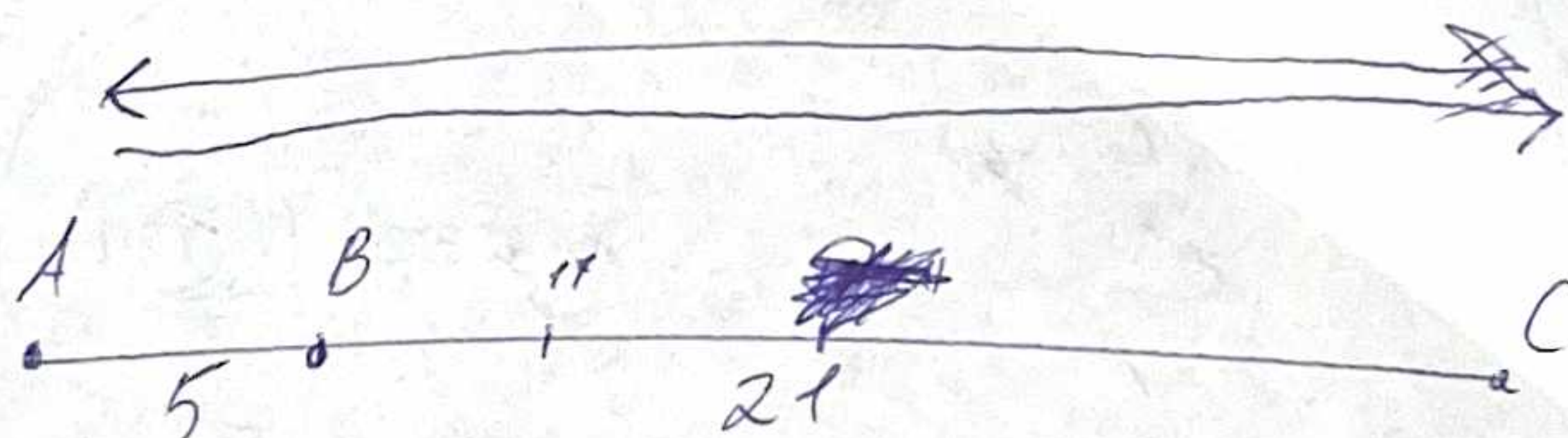
$$\textcircled{6} (x-3)(x-1)^3 + (3-x)(x-2)^3 = 7(x-3)$$

$$\cancel{(x-3)}(x-1)^3 + \cancel{(3-x)}(x-2)^3 = 7\cancel{(x-3)} \quad | : (x-3)$$

$$x-3$$

$$(x-1)^3 - (x-2)^3 = 7$$

$$\theta \quad AC = 26 \text{ (km)}$$



20

$$\frac{26}{26} = 1$$

26

$$\frac{17}{26}$$