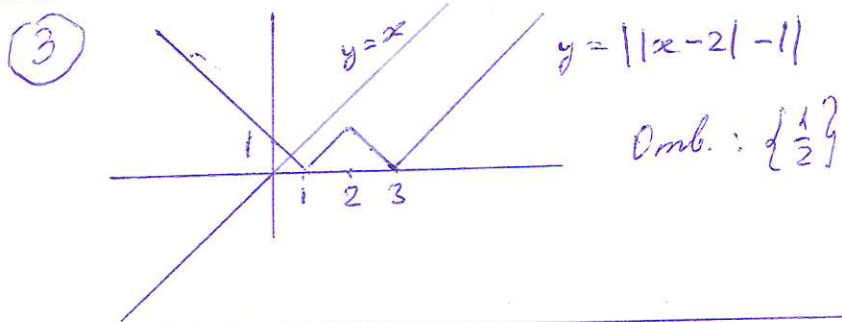


16

$$① = \frac{4x + 4\sqrt{xy}}{x + y - 2\sqrt{xy}}$$

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



Решать можно любым способом.

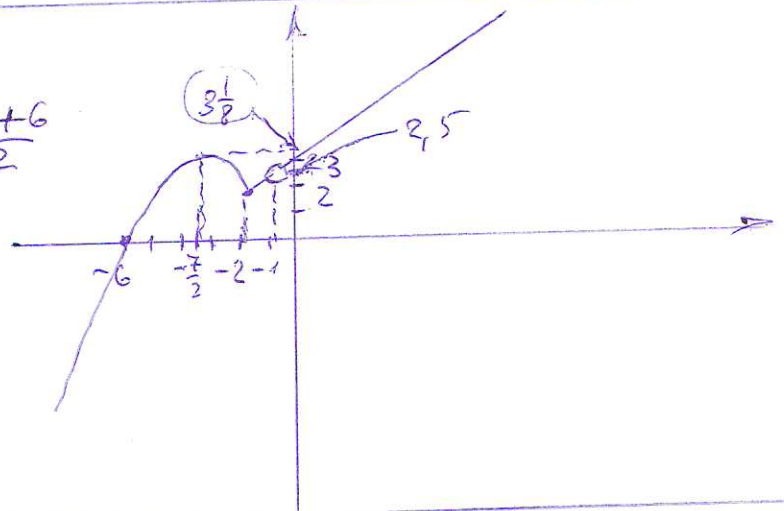
$$④ \frac{3n^2 + 4n - 3}{n+3} = 3n - 5 + \frac{12}{n+3}$$

$$\begin{aligned} n+3 &= 1 \quad \emptyset & n+3 &= 2 \quad \emptyset & n+3 &= 3 \quad \emptyset \\ n+3 &= 4 \Leftrightarrow n=1 & n+3 &= 6 \Leftrightarrow n=3 \end{aligned}$$

Отв.: $\{1, 3, 9\}$

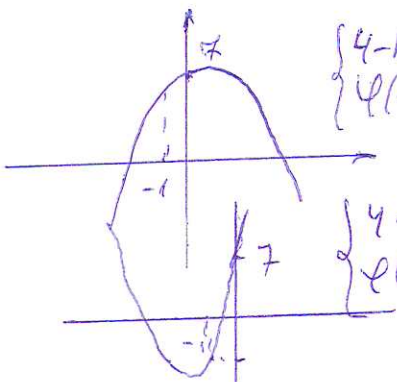
$$n+3 = 12 \Leftrightarrow n=9$$

$$⑤ \begin{aligned} x \geq -2: & y = \frac{(x+1)(x+6)}{2(x+1)} \Leftrightarrow \begin{cases} x \neq -1 \\ y = \frac{x+6}{2} \end{cases} \\ x < -2: & y = \frac{x^2 + 7x + 6}{-2} \end{aligned}$$



$$⑥ \Leftrightarrow \begin{cases} 7-x = x^2 - 4x + 4 \\ x \neq 2 \end{cases} \Rightarrow \begin{cases} x = \frac{3 \pm \sqrt{21}}{2} \\ x \neq 2 \end{cases} \Leftrightarrow x = \frac{3 + \sqrt{21}}{2}$$

(7) $\varphi(x) = (4-b^2)x^2 - (3b-1)x + 7$ $\varphi(0) = 7$ (16)



$$\begin{cases} 4-b^2 < 0 \\ \varphi(-1) > 0 \end{cases} \begin{cases} b > 2 \\ b < -2 \\ b^2 - 3b - 10 < 0 \end{cases} \begin{cases} b > 2 \\ b < -2 \\ -2 < b < 5 \end{cases} \quad \underline{2 < b < 5}$$

$$\begin{cases} 4-b^2 > 0 \\ \varphi(-1) < 0 \end{cases} \begin{cases} -2 < b < 2 \\ b > 5 \\ b < -2 \end{cases} \quad \emptyset$$

Омб: $(2; 5)$

(8) $\frac{x^2+4}{x} + \frac{1}{\frac{x^2+4}{x}+3} + \frac{11}{2} = 0$; $\frac{1}{t} + \frac{1}{t+3} + \frac{11}{2} = 0$

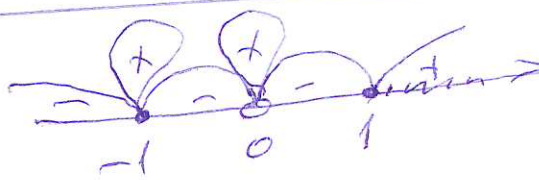
t''

$$2t^2 + 17t + 35 = 0 \Rightarrow \begin{cases} t = -5 \\ t = -\frac{7}{2} \end{cases}$$

$$\begin{cases} \frac{x^2+4}{x} = -5 \\ \frac{x^2+4}{x} = -\frac{7}{2} \end{cases} \begin{cases} x = -1 \\ x = -4 \end{cases}$$

Омб: $\{-4; -1\}$

(9) $\frac{(x-1)^3(x+1)^4}{x^2(x^4-x^2+1)} \geq 0$



Омб: $\{-1\} \cup [1; +\infty)$

(10) $\begin{cases} x - \text{часы за которые Илья делает всю работу отдельно} \\ y - \text{---} \end{cases}$

$$\begin{cases} \frac{1}{x} + \frac{1}{y} = \frac{1}{12} \\ \frac{2}{x} + \frac{3}{y} = \frac{1}{5} \end{cases} \begin{cases} x = 20 \\ y = 30 \end{cases} \quad \text{Омб: } \{20\}$$

(11) $x \leq 2$: $-x+2 > 2+x+x-2$ $x < 1$

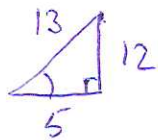
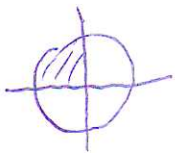
$2 < x \leq 3$: $x-2 > 2+x+x-3$ $x < -1$

$x \geq 3$: $x-2 > 2+x-x+3$ $x > 7$

Омб: $(-\infty; 1) \cup (7; +\infty)$

$$|x-2| > 2+x-|x-3|$$

(12)



$$t_y = -\frac{12}{5} = -2,4$$

(16)

$$(13) \quad a_1 + 4d + a_1 + 8d = 40 \Leftrightarrow a_1 + 6d = 20$$

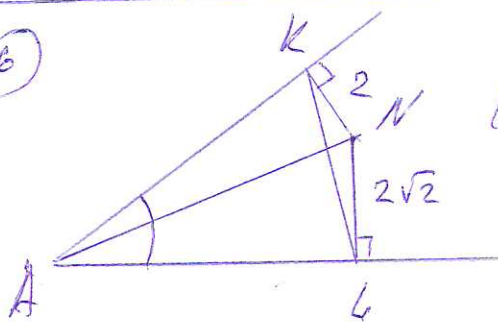
$$3a_1 + 2d + 6d + 10d = 3(a_1 + 6d) = 3 \cdot 20 = 60$$

Jawab: $\{60\}$.

$$(14) \quad -\cot 20^\circ \cdot \tan 20^\circ \cdot (-1) = 1$$

$$(15) \quad 5x - 12 = 0 \Leftrightarrow x = 2,4$$

(16)



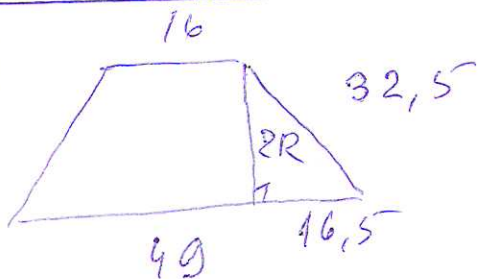
$$|KL| = \sqrt{4 + 8 - 2 \cdot 2 \cdot 2\sqrt{2} \cos 135^\circ} =$$

$$= \sqrt{12 + 8\sqrt{2} \cdot \frac{\sqrt{2}}{2}} = 2\sqrt{5}$$

$$\text{T. sm. } \Delta KLN : \frac{|KL|}{\sin 135^\circ} = 2R = |AN|$$

$$|AN| = \frac{2\sqrt{5}}{\frac{\sqrt{2}}{2}} = 2\sqrt{10} \quad \text{Jawab: } 2\sqrt{10}$$

(17)

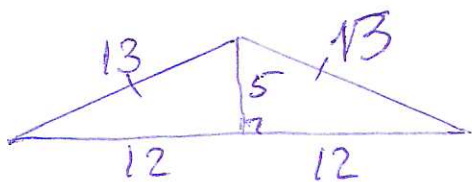


$$2R = \sqrt{32,5^2 - 16,5^2} = 28$$

$$\underline{R = 14}$$

$$(18) \quad B(-6; 2) \quad M(-\frac{3}{2}; -1)$$

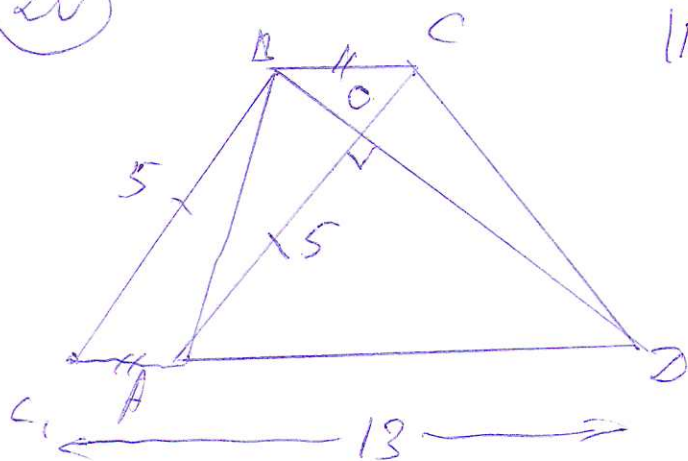
$$|BM| = \sqrt{\left(-6 + \frac{3}{2}\right)^2 + 3^2} = \sqrt{\left(\frac{9}{2}\right)^2 + 9} = \sqrt{\frac{81 + 36}{4}} = \frac{\sqrt{117}}{2}$$



$$z = \frac{S}{p} = \frac{60}{25} = 2,4$$

$$R = \frac{abc}{4S} = \frac{13 \cdot 13 \cdot 24}{4 \cdot 60} = 16,9$$

(20)



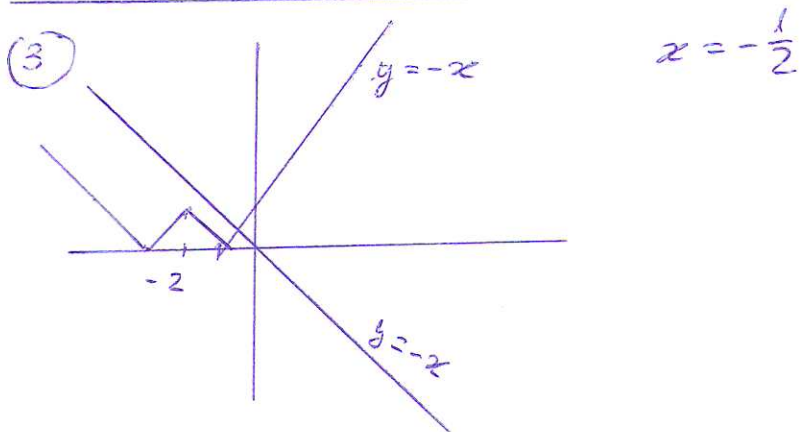
$$|BD| = 12$$

$$S = \frac{5 \cdot 12}{2} = 30$$

$$\textcircled{1} = a^{\frac{1}{2}} b^{\frac{1}{2}} : \sqrt{ab} = 1$$

(11/6)

$$\textcircled{2} = \frac{2+\sqrt{3}}{\sqrt{2+\sqrt{3}}} \cdot \sqrt{2-\sqrt{3}} = 1$$



$$\textcircled{4} \quad \frac{2n^2+5n-5}{n+1} = 2n+3 - \frac{8}{n+1}$$

$n+1=1$	$\emptyset$
$n+1=2$	$n=1$
$n+1=4$	$n=3$
$n+1=8$	$n=7$

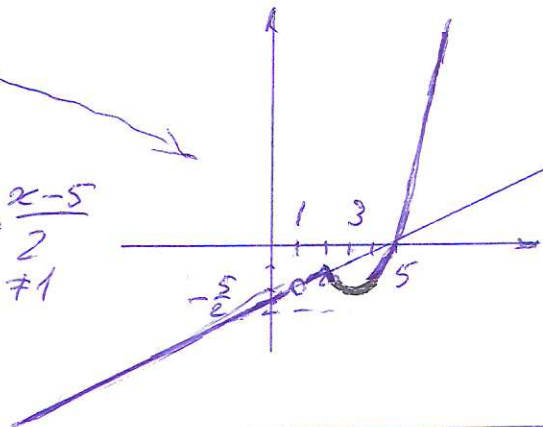
omb: $\{1; 3; 7\}$

$$\textcircled{5} \quad y = \frac{x^2-6x+5}{x-1x-2}$$

$x \geq 2 : y = \frac{(x-1)(x-5)}{2}$

$x < 2 : y = \frac{(x-1)(x-5)}{x-2+x} = \frac{(x-1)(x-5)}{2(x-1)} \begin{cases} y = \frac{x-5}{2} \\ x \neq 1 \end{cases}$

$y(3) = -2$



$$\textcircled{6} \quad \begin{cases} 5-x = x^2-4x+4 \\ x \geq 2 \end{cases} \quad \begin{cases} x^2-3x-1=0 \\ x \geq 2 \end{cases} \quad \begin{cases} x = \frac{3 \pm \sqrt{9+4}}{2} = \frac{3 \pm \sqrt{13}}{2} \\ x \geq 2 \end{cases}$$

omb: $\left\{ \frac{3+\sqrt{13}}{2} \right\}$

$\textcircled{7}$

1) $\begin{cases} a^2-1 > 0 \\ f(-1) < 0 \end{cases} \Leftrightarrow \begin{cases} a > 1 \\ a < -1 \end{cases} \Leftrightarrow \begin{cases} 1 < a < 1+\sqrt{6} \\ 1-\sqrt{6} < a < -1 \end{cases}$

2) $\begin{cases} (a^2-1) < 0 \\ f(-1) > 0 \end{cases} \Leftrightarrow \begin{cases} -1 < a < 1 \\ a > 1+\sqrt{6} \\ a < 1-\sqrt{6} \end{cases} \quad \emptyset$

omb: $(1-\sqrt{6}; -1) \cup (1; 1+\sqrt{6})$

$$(8) \frac{4(x^2+1)}{x^2-10x+1} - \frac{5x}{x^2+1} + \frac{7}{2} = 0 \Leftrightarrow \frac{4 \cdot \frac{x^2+1}{5x}}{\frac{x^2+1}{5x} - 2} - \frac{5x}{x^2+1} + \frac{7}{2} = 0$$

$$\left[\begin{array}{l} \frac{x^2+1}{5x} = t \\ x \neq 0 \end{array} \right. : \frac{4t}{t-2} - \frac{1}{t} + \frac{7}{2} = 0 \quad \left\{ \begin{array}{l} 15t^2 - 16t + 4 = 0 \\ t \neq 0 \\ t \neq 2 \end{array} \right. \Leftrightarrow \left[\begin{array}{l} t = \frac{2}{5} \\ t = \frac{2}{3} \end{array} \right.$$

$$/ x=0: \frac{4}{1} - 0 + \frac{7}{2} \neq 0 /$$

$$\left[\begin{array}{l} \frac{x^2+1}{5x} = \frac{2}{5} \\ \frac{x^2+1}{5x} = \frac{2}{3} \end{array} \right. \left\{ \begin{array}{l} x=1 \\ x=3 \\ x=\frac{1}{3} \end{array} \right.$$

Омб: $\{\frac{1}{3}; 1; 3\}$

$$(9) \Leftrightarrow \frac{(x-1)^4(x+1)^3}{x^4(x^4-x^2+1)} \leq 0$$

Омб: $(-\infty; -1] \cup \{1\}$

(10) x — дни за которые I бригада выполнит всю работу отдельно.

y — " " " " " "

$$\left\{ \begin{array}{l} \frac{1}{x} + \frac{1}{y} = \frac{1}{8} \\ \frac{3}{x} + \frac{12}{y} = \frac{3}{4} \end{array} \right. \quad \left\{ \begin{array}{l} x=12 \\ y=24 \end{array} \right.$$

Омб: 24.

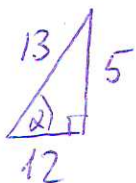
(11) $|x-1| > 3+x - |2-x|$

$|x-1| > 3+x - |x-2|$

$x \leq -1: 1-x > 3+x+x-2$ $3x < 0$	$\left\{ \begin{array}{l} x < 0 \\ \emptyset \\ x > 6 \end{array} \right.$
$-1 < x \leq 2: x-1 > 3+x+x-2$ $x < -2$	
$x > 2: x-1 > 3+x-x+2$ $x > 6$	

Омб: $(-\infty; 0) \cup (6; +\infty)$

(12)



$$\operatorname{ctg} \alpha = -\frac{12}{5} = \underline{\underline{-2,4}}$$

(116)

(13)

$$a_4 + a_6 = 2a_1 + 3d + 5d = 2a_1 + 8d = 38 \Leftrightarrow a_1 + 4d = 19$$

$$a_2 + a_5 + a_8 = 3a_1 + d + 4d + 7d = 3a_1 + 12d = 3(a_1 + 4d) = \underline{\underline{57}}$$

Omd: 57.

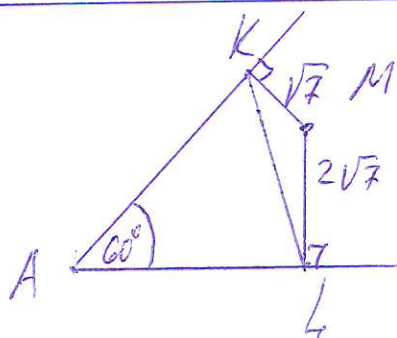
(14)

$$\underbrace{\operatorname{ctg} 140^\circ}_{\substack{\parallel \\ -\operatorname{ctg} 40^\circ}} \cdot \underbrace{\operatorname{tg} 40^\circ \cdot \operatorname{tg} 135^\circ}_{(-1)} = 1$$

(15)

$$\vec{a} \cdot \vec{b} = 4x - 30 = 0 \Leftrightarrow x = \frac{15}{2} = \underline{\underline{7,5}}$$

(16)

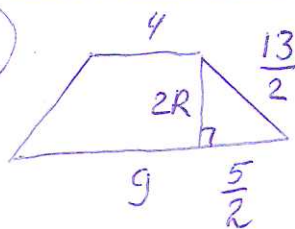


$$|AM| = \frac{7}{\frac{\sqrt{3}}{2}} = \frac{14}{\sqrt{3}} = \underline{\underline{\frac{14\sqrt{3}}{3}}}$$

$$|KL| = \sqrt{7 + 4 \cdot 7 - 2 \cdot \sqrt{7} \cdot 2\sqrt{7} \cdot \cos 120^\circ} = \sqrt{35 + 2 \cdot 7 \cdot 2 \cdot \frac{1}{2}} = 7$$

$$\frac{|KL|}{\sin 120^\circ} = 2R = |AM|$$

(17)



$$2R = \sqrt{6,5^2 - 2,5^2} = \sqrt{4 \cdot 9} = 2 \cdot 3$$

$$\underline{\underline{R = 3}}$$

(18)

B(0;0)

M(3;4)

$$|BM| = \sqrt{9+16} = 5$$