

$$8. y = ax^2 + x - 3 \quad (a \neq 0).$$

$$x=1. \quad y = a + 1 - 3 = a - 2.$$

$$M(1, a-2) \quad \text{[кас.]}$$

$$3y - 6x = 1$$

$$x_0 = 1. \quad y(x_0) = a - 2.$$

$$y = 2x + \frac{1}{2}$$

$$tg \alpha = 2$$

$$y = f(x_0) + f'(x_0)(x - x_0)$$

$$y = a - 2 + (2a + 1)(x - 1)$$

$$y' = 2ax + 1$$

$$y = a - 2 + \underline{2ax} - \underline{2a} + \underline{x} - 1$$

$$\checkmark y = x(2a + 1) - a - 3$$

$$\checkmark y = 2x + \frac{1}{2}$$

$$2a + 1 = 2$$

$$2a = 1 \quad | a = \frac{1}{2}$$

$$10) y = 2x - 1 \quad \text{кас.}$$

$$tg \alpha = 2$$

$$y = \sqrt{4x - 3} = (4x - 3)^{\frac{1}{2}}$$

$$y' = \frac{1}{2} (4x - 3)^{-\frac{1}{2}} \cdot 4 = \frac{2}{\sqrt{4x - 3}}$$

$$\frac{2}{\sqrt{4x - 3}} = 2$$

$$\sqrt{4x - 3} = 1$$

$$4x - 3 = 1$$

$$4x = 4$$

$$x = 1$$

$$2x - 1 = \sqrt{4x - 3}$$

$$4x^2 - 4x + 1 = 4x - 3$$

$$4x^2 - 8x + 4 = 0$$

$$x^2 - 2x + 1 = 0$$

$$(x - 1)^2 = 0$$

$$x = 1$$

$$y = f(x_0) + f'(x_0)(x - x_0). \quad x_0 \text{ аб. точки кас.}$$

$$y = \sqrt{4x_0 - 3} + \frac{2}{\sqrt{4x_0 - 3}}(x - x_0).$$

$$y = \underbrace{\frac{2}{\sqrt{4x_0 - 3}}}_K \cdot x + \underbrace{\sqrt{4x_0 - 3} - \frac{2x_0}{\sqrt{4x_0 - 3}}}_b$$

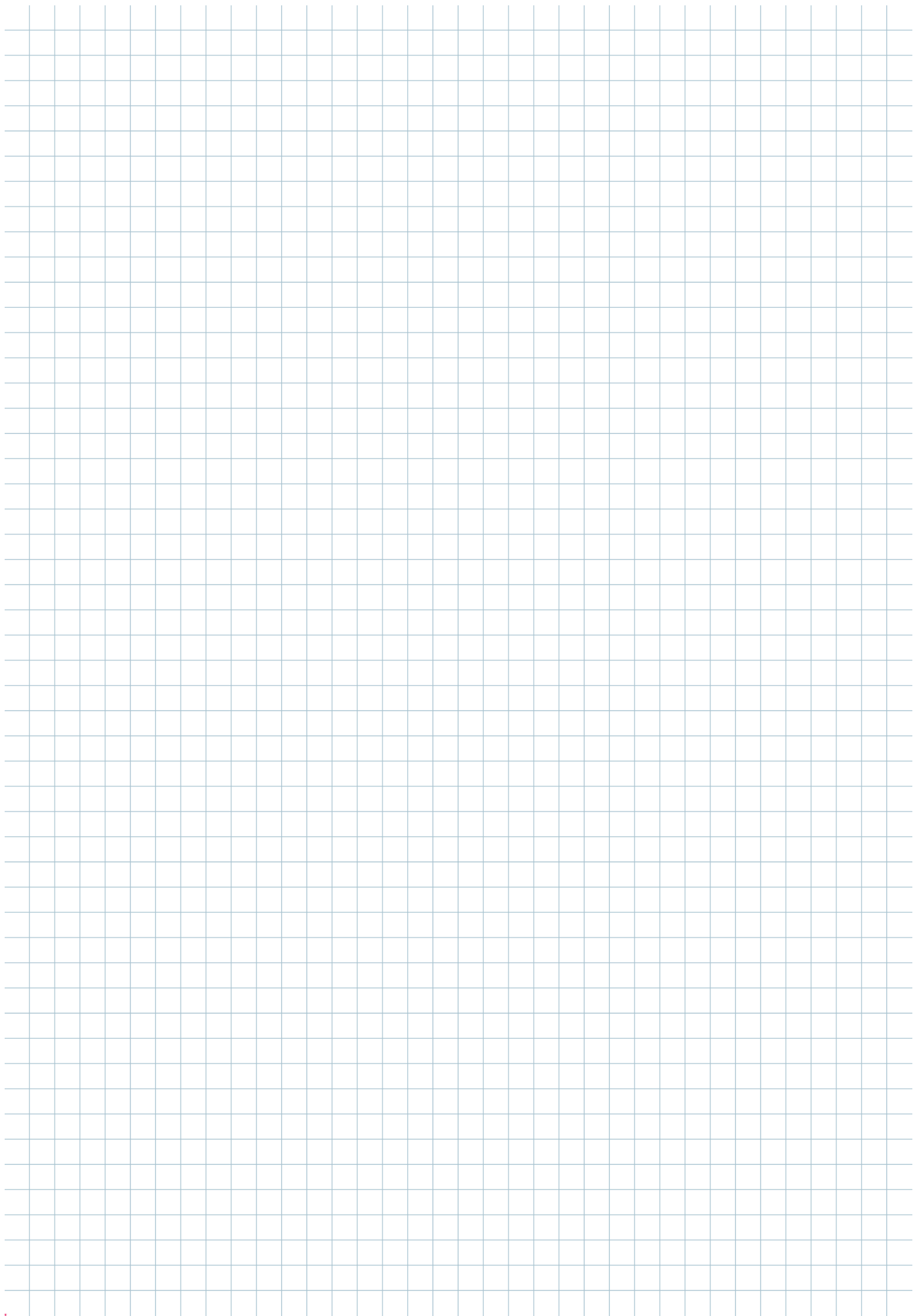
$$y = 2x - 1$$

$$\begin{cases} \frac{2}{\sqrt{4x_0 - 3}} = 2 \Rightarrow x_0 = 1. \\ \sqrt{4x_0 - 3} - \frac{2x_0}{\sqrt{4x_0 - 3}} = -1. \end{cases}$$

$$\sqrt{4 - 3} - \frac{2}{\sqrt{4 - 3}} = -1$$

$$1 - \frac{2}{1} = -1$$

$$-1 = -1$$



$$y = \frac{x^2 \sqrt{3}}{24}$$

$$M(4, -2\sqrt{3})$$

глас менгы касатканын, улоход.н.

$$y = f(x_0) + f'(x_0)(x - x_0)$$

$$y = \frac{x_0^2 \sqrt{3}}{24} + \frac{x_0 \sqrt{3}}{12}(x - x_0)$$

$$y = \left(\frac{x_0 \sqrt{3}}{12}\right)x + \frac{x_0^2 \sqrt{3}}{24} - \frac{x_0^2 \sqrt{3}}{12}$$

$$y = \left(\frac{x_0 \sqrt{3}}{12}\right)x - \frac{x_0^2 \sqrt{3}}{24}$$

$$-2\sqrt{3} = \frac{x_0 \sqrt{3}}{3} - \frac{x_0^2 \sqrt{3}}{24} \cdot 24$$

$$-48 = x_0 \cdot 8 - x_0^2$$

$$x_0^2 - 8x_0 - 48 = 0$$

$$\frac{D}{4} = 16 + 48 = 64 = 8^2$$

$$x_{1,2} = \frac{4 \pm 8}{1} = \begin{bmatrix} 12 \\ -4 \end{bmatrix}$$

$$y_1 = \sqrt{3}x - 6\sqrt{3}$$

$$y_2 = -3\sqrt{3}x - \frac{2\sqrt{3}}{3}$$

$$\sqrt{3}x - 6\sqrt{3} = -3\sqrt{3}x - \frac{2\sqrt{3}}{3}$$

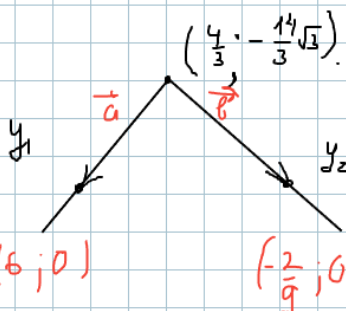
$$4x = 6 - \frac{2}{3}$$

$$4x = 3 - \frac{1}{3} = \frac{8}{3}$$

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

$$\sqrt{3} \left( \frac{4}{3} - 6 \right)$$

$$-\frac{14}{3}\sqrt{3}$$



$$y_1 = \frac{4}{3}\sqrt{3} - 6\sqrt{3}$$

$$\vec{a} = \left( 6 - \frac{4}{3}; \frac{14}{3}\sqrt{3} \right) = \left( \frac{14}{3}; \frac{14}{3}\sqrt{3} \right)$$

$$\vec{b} = \left( -\frac{2}{9} - \frac{4}{3}; \frac{14}{3}\sqrt{3} \right) = \left( -\frac{14}{9}; \frac{14}{3}\sqrt{3} \right)$$

$$|\vec{a}| = \sqrt{\frac{14^2}{9} + 3 \frac{14^2}{9}} = \sqrt{4 \cdot \frac{14^2}{9}} = \frac{2 \cdot 14}{3}$$

$$|\vec{b}| = \sqrt{\frac{14^2}{81} + \frac{14^2}{9}} = 14 \sqrt{\frac{10}{81}} = \frac{14 \sqrt{10}}{9}$$

$$\cos \alpha = \frac{\vec{a} \cdot \vec{b}}{|\vec{a}| |\vec{b}|} = \frac{-\frac{14^2}{27} + \frac{14^2}{3}}{\frac{2 \cdot 14}{3} \cdot \frac{14 \sqrt{10}}{9}} = \frac{-\frac{1}{2} + \frac{1}{3}}{\frac{2 \sqrt{10}}{27}} =$$

$$= \frac{\frac{3-2}{6}}{\frac{2 \sqrt{10}}{27}} = \frac{1}{2 \sqrt{10}} = \frac{\sqrt{10}}{20} = \frac{2\sqrt{5}}{50}$$

$$\text{Угол } \alpha = \arccos \frac{\sqrt{5}}{2\sqrt{5}}$$

$$\frac{\sqrt{7}}{5}$$

$$|x^2 - 2x| = a - 5 \quad \text{4 перес.}$$

$$a - 5 > 0$$

$$a > 5$$

$$x^2 - 2x = a - 5 \Leftrightarrow x^2 - 2x = 5 - a$$

$$x^2 - 2x - a + 5 = 0 \quad x^2 - 2x + a - 5 = 0$$

$$\frac{D}{4} = 1 - (-a + 5) =$$

$$\frac{D}{4} = 1 - (a - 5) = 1 - a + 5 = -a + 6 > 0$$

$$a < 6$$

$$= 1 + a - 5 = a - 4 > 0$$

$$D > 0 \text{ 2 к.}$$

2 по 2 к.

$$a > 4$$

$$\begin{cases} a > 4 \\ a < 6 \end{cases} \rightarrow a \in (4; 6)$$

$$a \in (5; 6)$$

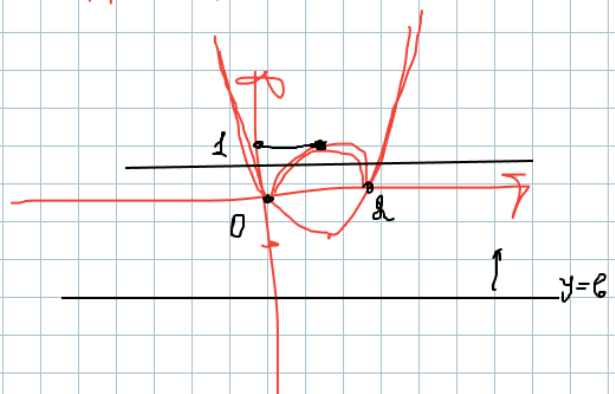
$$|x^2 - 2x| = \underbrace{a - 5}_b$$

$$|x^2 - 2x| = b$$

$$y = |x^2 - 2x|$$

$$y = b$$

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



$$0 < a - 5 < 1$$

$$5 < a < 6$$

$$2 - |x| = |y| > 0$$

$$2 - |x| > 0$$

$$|x| < 2 \quad -2 < x < 2$$

$$|y| < 2 \quad -2 < y < 2$$

$$1) \begin{cases} x^2 + y^2 = a & a \geq 0 \\ |x| + |y| = 2 \end{cases}$$

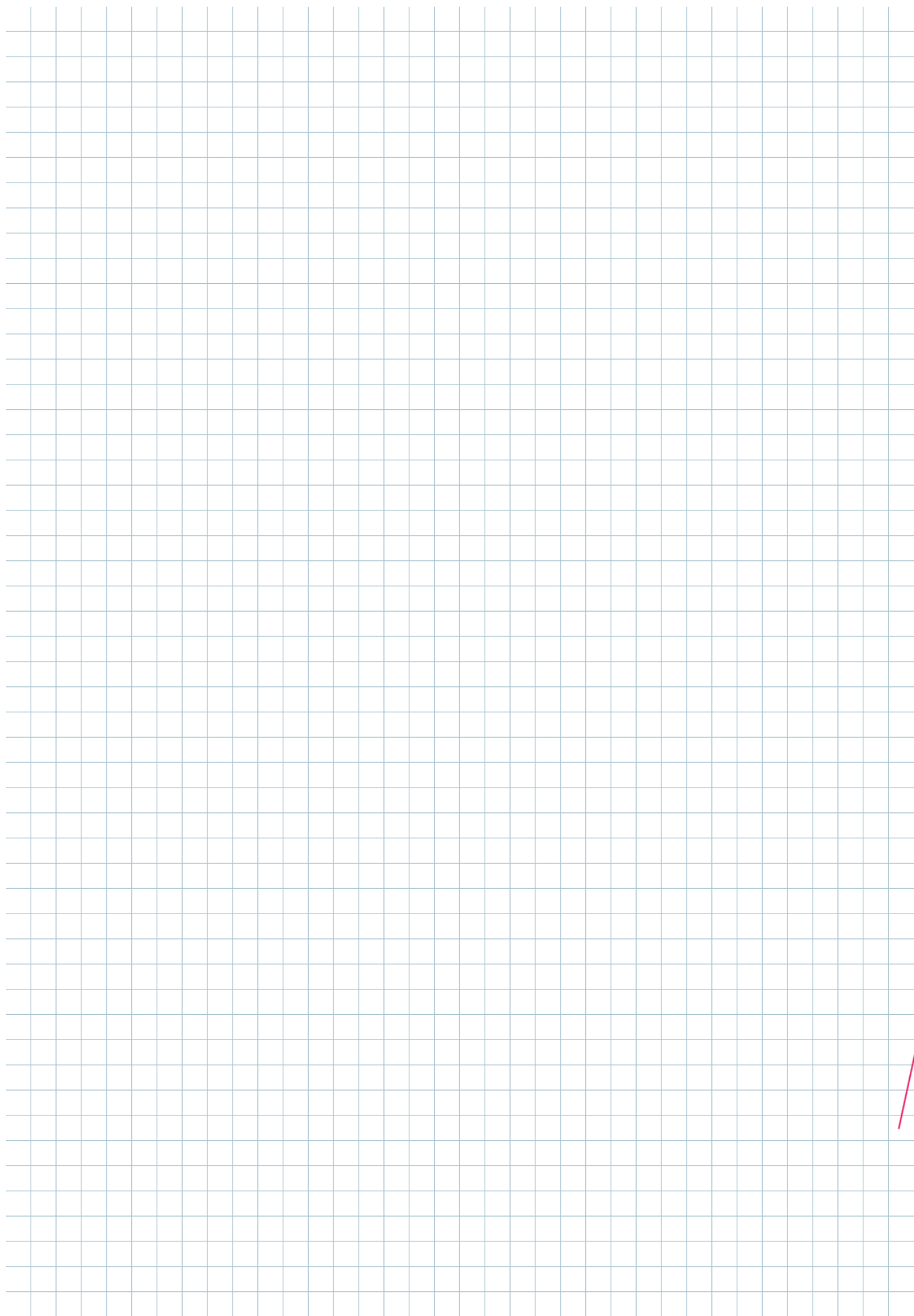
$$x^2 + y^2 + 2|x||y| = 4$$

$$2|x||y| = 4 - a \quad 4 - a \geq 0$$

$$0 \leq 4$$

$$x^2 - |x| + y^2 - |y| = a - 2$$

$$|x|(|x| - 1) + |y|(|y| - 1) = a - 2$$



1)  $x^2 + y^2 = a$ .  
 $a = 0$ .  $x = y = 0$ .  
 $a < 0$ .  
 $a > 0$ .  $x^2 + y^2 = a$ .  
 ok.  $R = \sqrt{a}$ .  
 (0, 0) - центр.

2)  $|x| + |y| = 2$ .

1.  $x > 0, y > 0$ .

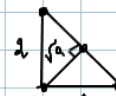
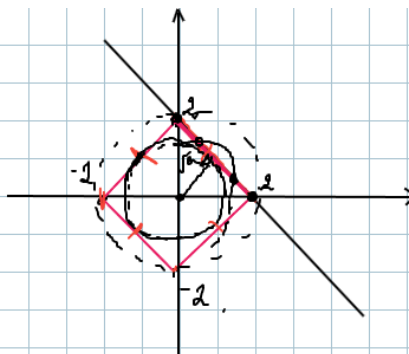
$x + y = 2$ .

$y = 2 - x$

2.  $y < 0, y > 0$

$-x + y = 2$

$y = x + 2$ .



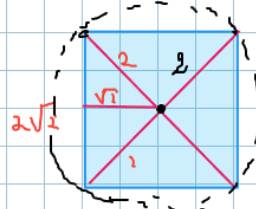
$\sqrt{a} = \sqrt{2}$

$a = 2$ .

$a > 2$ .

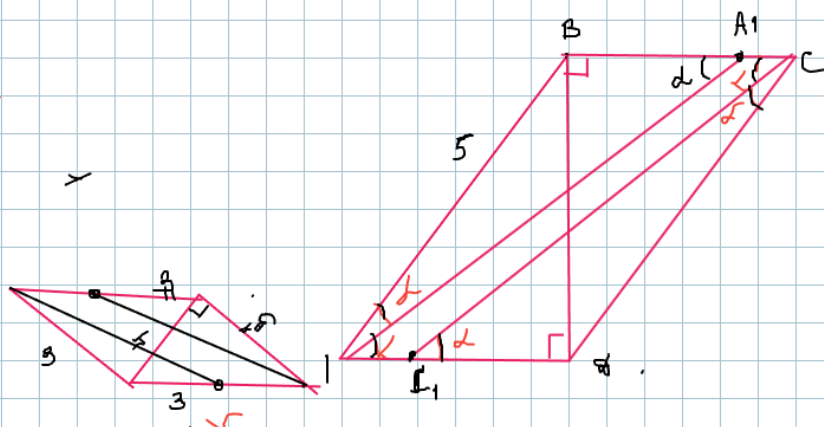
$\sqrt{a} = 2$

$a = 4 \Rightarrow a < 4$ .



$2 < a < 4$

19.6.



$AA_1 \parallel CC_1$

$\triangle AOB \sim \triangle COE$ .

$\frac{AO}{OE} = \frac{OB}{OB}$

$AO \cdot OB = OE \cdot OB$ .

$S_{C_1 B C} = \frac{1}{2} \cdot 3 \cdot 3 \sin(180^\circ - 2\alpha) =$

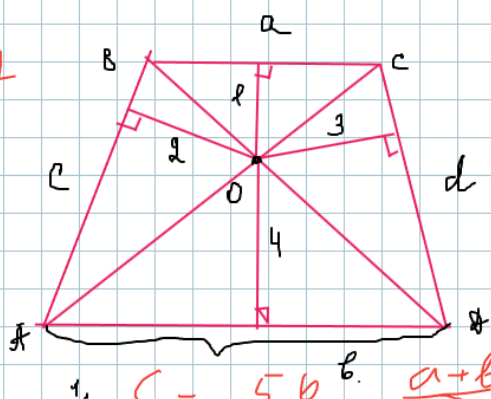
$S_{\triangle A A_1 B} = S_{C_1 B C} = \frac{9}{2} \cdot \sin 2\alpha$

$\sin 2\alpha = \frac{4}{5}$

$S_{\triangle A C B} = 3 \cdot 4 = 12$

$S_{\triangle C_1 C A_1} = 12 - \frac{18}{5} = 12 - 3.6$

19.7

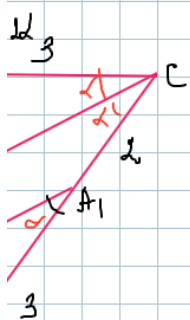


$S_{\triangle AOB} = S_{\triangle COB}$ .

$ac = 3d$ .

$c = 5, b = 5, h = (a+b) \cdot \frac{5}{2}$





$$\frac{1}{2} \cdot 9 \cdot \sin 2\alpha = \frac{9}{2} \cdot \frac{4}{5} = 9,6.$$

$$\therefore \frac{9}{2} \cdot \frac{4}{5} = \frac{9 \cdot 2}{5} = \frac{18}{5}$$

$$,6 = 9,4$$


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$$P = a + b + c + d$$

$$P = a + b + c + d$$

$$a + b = 70$$

$$1. \triangle AOB \sim \triangle BOC \Rightarrow \frac{a}{b} = \frac{1}{4} \quad b = 4a \quad a + 4a = 20$$

$$a = 4$$

$$b = 16$$

$$3. \frac{1}{2} \cdot 2 \cdot 6 + \frac{1}{2} \cdot 3 \cdot 4 + \frac{1}{2} \cdot 4 \cdot 16 + \frac{1}{2} \cdot 1 \cdot 4 = 50$$

$$2c + 7d + 64 + 4 = 100$$

$$2c + 7d = 32$$

$$3d + 3d = 32$$

$$d = \frac{32}{6} = \frac{16}{3}$$

$$4c = 32$$

$$c = \frac{32}{4} = 8$$

$$P = 20 + 8 + \frac{16}{3}$$

$$\frac{28 \cdot 3 + 16}{3} = \frac{100}{3}$$

$$\begin{array}{r} 28 \\ \times 3 \\ \hline 84 \end{array}$$

$$\text{Answer: } \frac{100}{3}$$