

① $x^2 + y^2 - 4x - 8y - 8 = 0$

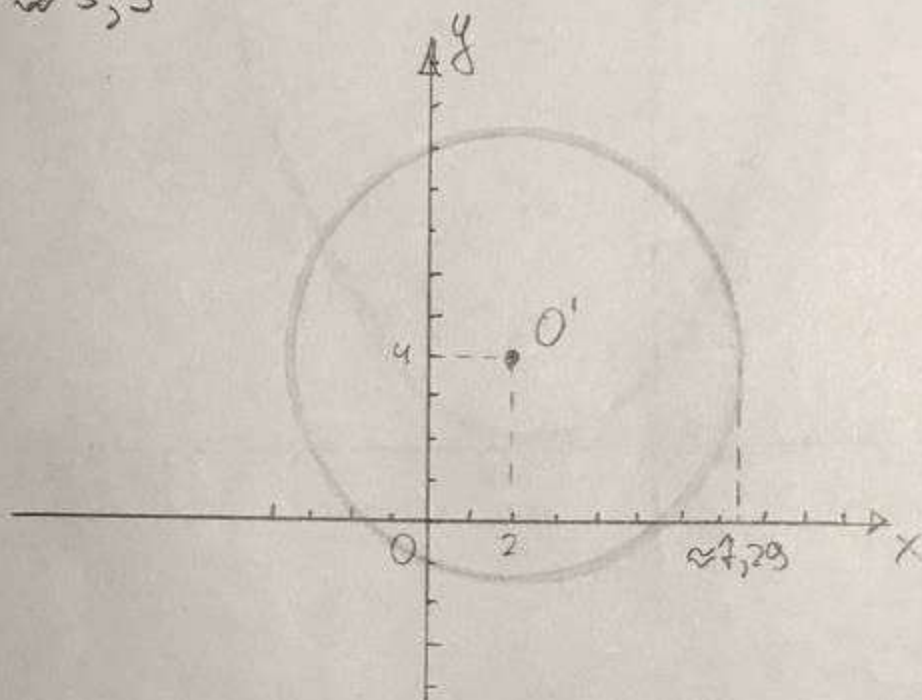
$$(x^2 - 4x + 4) + (y^2 - 8y + 16) = 8 + 4 + 16$$

$$(x-2)^2 + (y-4)^2 = 28$$

$$(x-2)^2 + (y-4)^2 = (2\sqrt{7})^2 \quad (\text{окружность})$$

$$a = b = R = 2\sqrt{7}; \quad O'(2; 4)$$

$\approx 5,3$



② $x^2 - 4y^2 + 6x - 16y + 1 = 0$

$$(x^2 + 6x + 9) + (-4y^2 - 16y - 16) = -1 + 9 - 16$$

$$(x+3)^2 - 4(y+2)^2 = -8 \quad | \div (-8)$$

$$\frac{(y+2)^2}{2} - \frac{(x+3)^2}{8} = 1$$

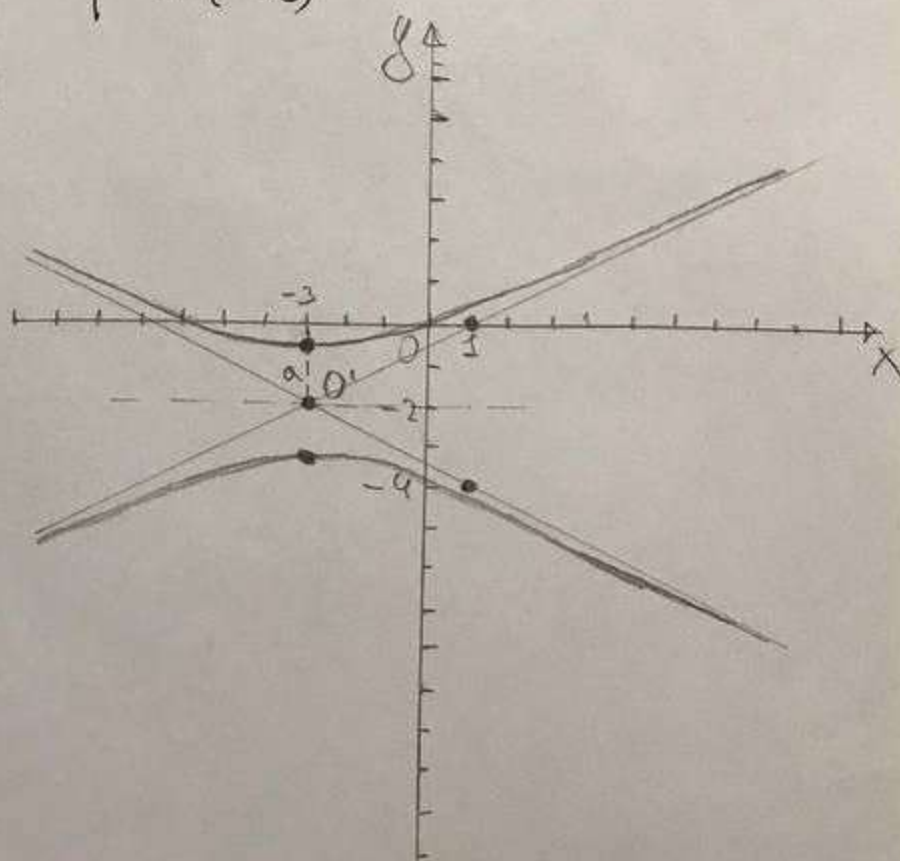
$$\frac{(y+2)^2}{(\sqrt{2})^2} - \frac{(x+3)^2}{(2\sqrt{2})^2} = 1$$

$$O'(-3; -2) \quad (\text{гипербола})$$

$$a = \sqrt{2} \approx 1,41$$

$$b = 2\sqrt{2} \approx 2,83$$

$$y = \pm \frac{\sqrt{2}}{2\sqrt{2}}x = \pm \frac{1}{2}x \quad (\text{асимптоты})$$



$$\textcircled{3} \quad x^2 - 6x - 6y + 10 = 0$$

$$(x^2 - 6x + 9) = 6y - 10 + 9$$

$$(x-3)^2 = 6y - 1$$

$$(x-3)^2 = 2 \cdot 3 \left(y - \frac{1}{6}\right) \quad (\text{парабола})$$

$$O'(3; \frac{1}{6}) ; \quad p = 3 > 0 \quad (\text{ветви } \uparrow)$$

