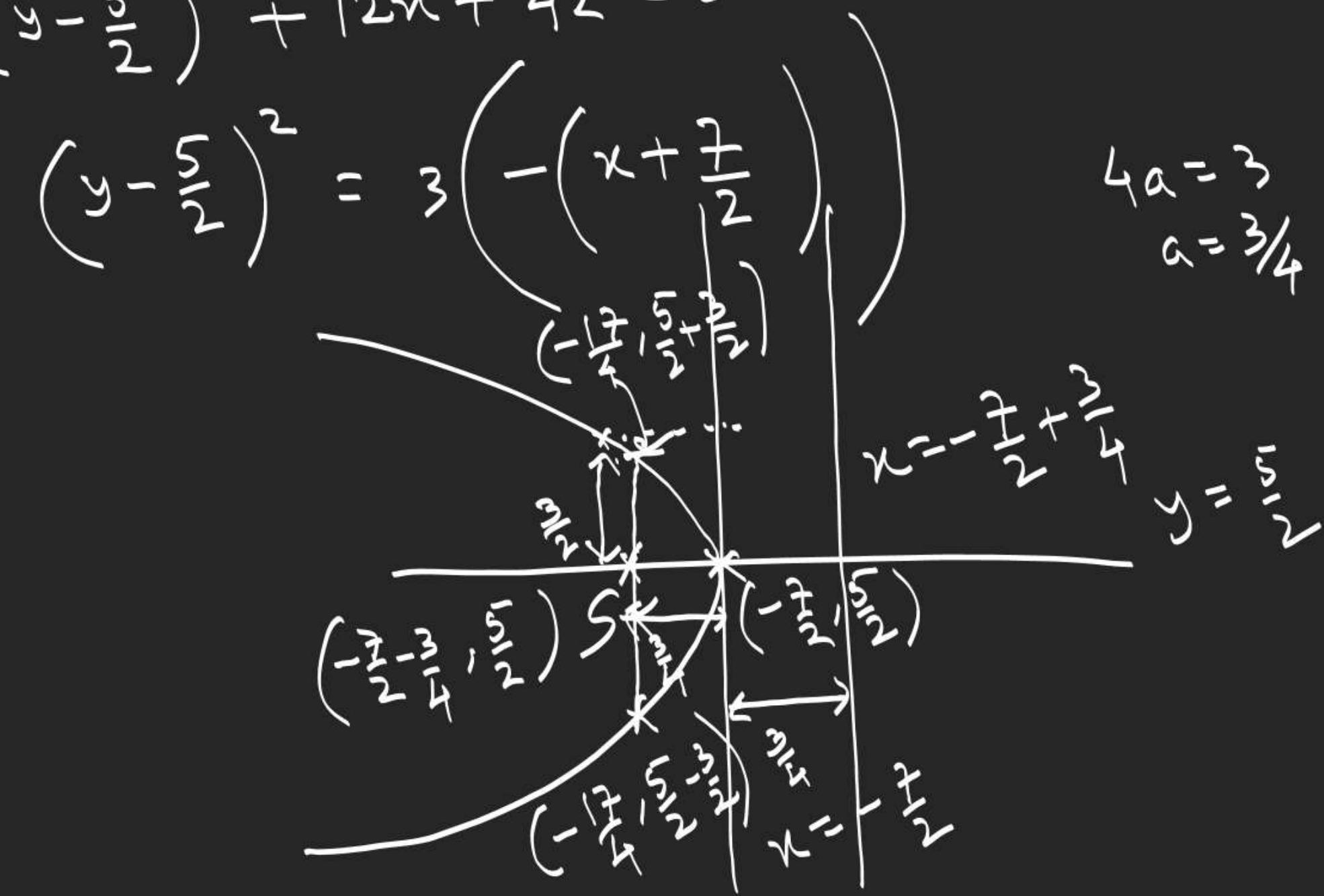


$$|x|^2 = 4a(-y)$$

$$x^2 = -4ay$$

$$\therefore \text{(i)} \quad 4y^2 + 12x - 20y + 67 = 0$$

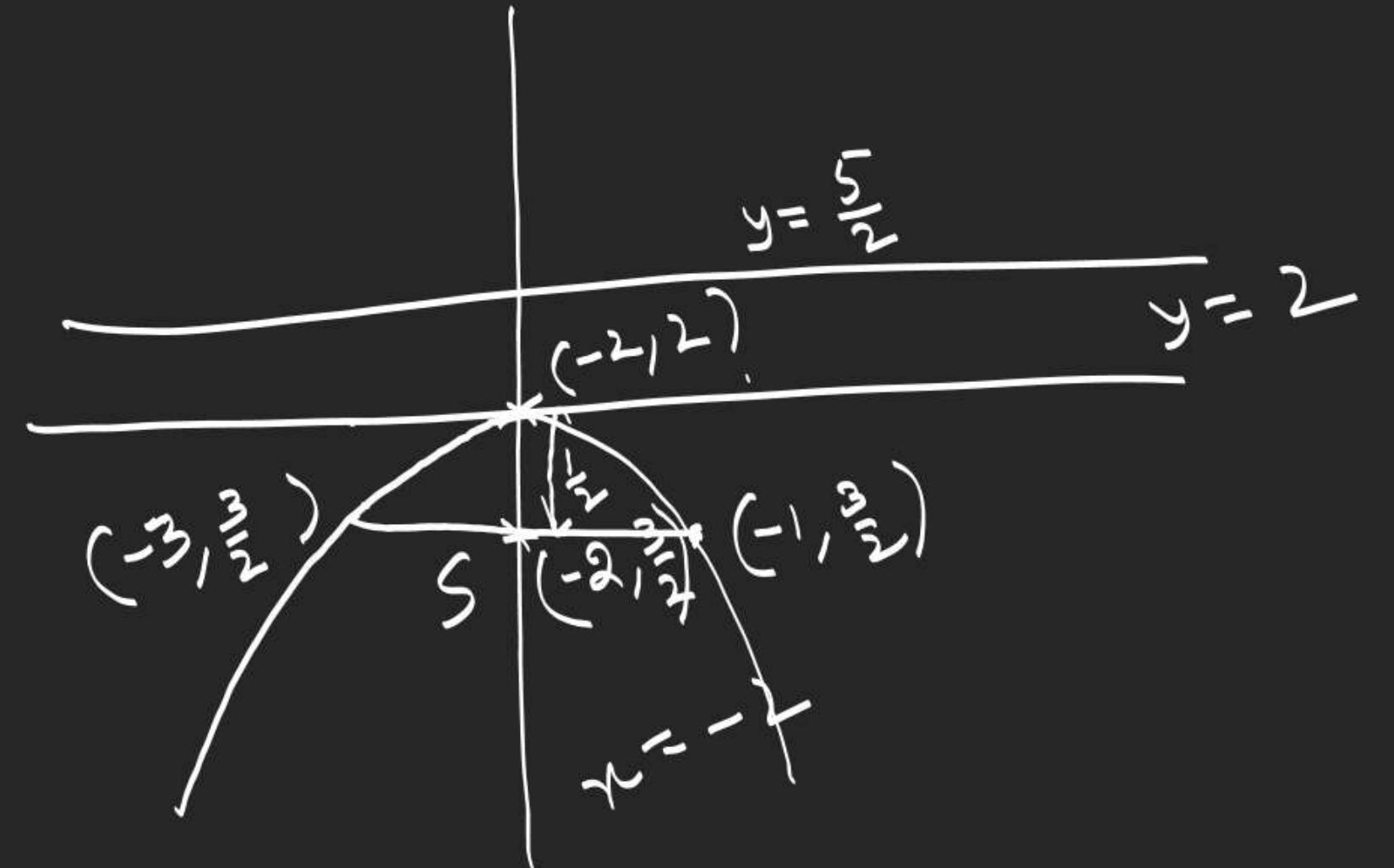
$$4\left(y - \frac{5}{2}\right)^2 + 12x + 42 = 0$$



$$(ii) \quad x^2 + 4x + 2y = 0$$

$$(x+2)^2 = 2 \cdot \left(-\left(y - 2 \right) \right)$$

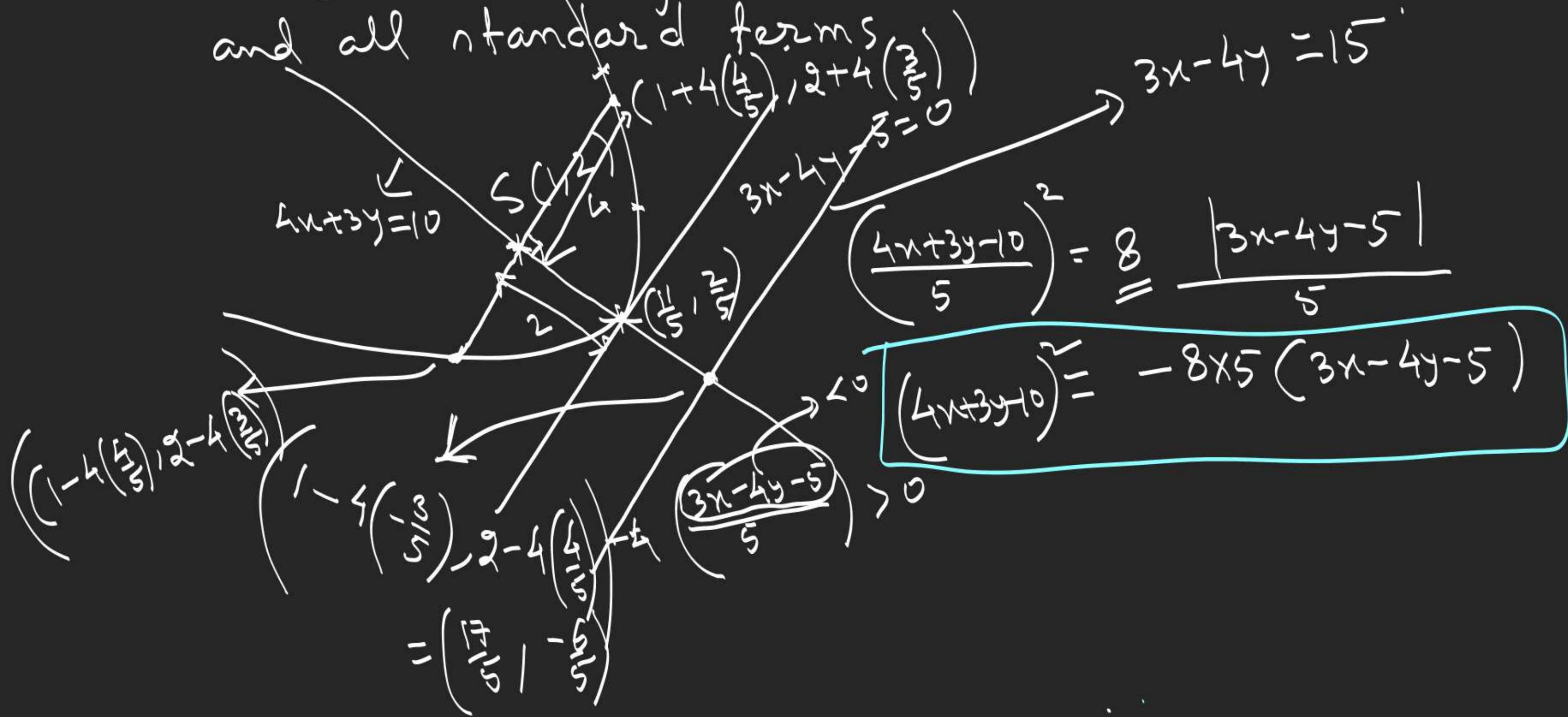
$$4a = 2$$

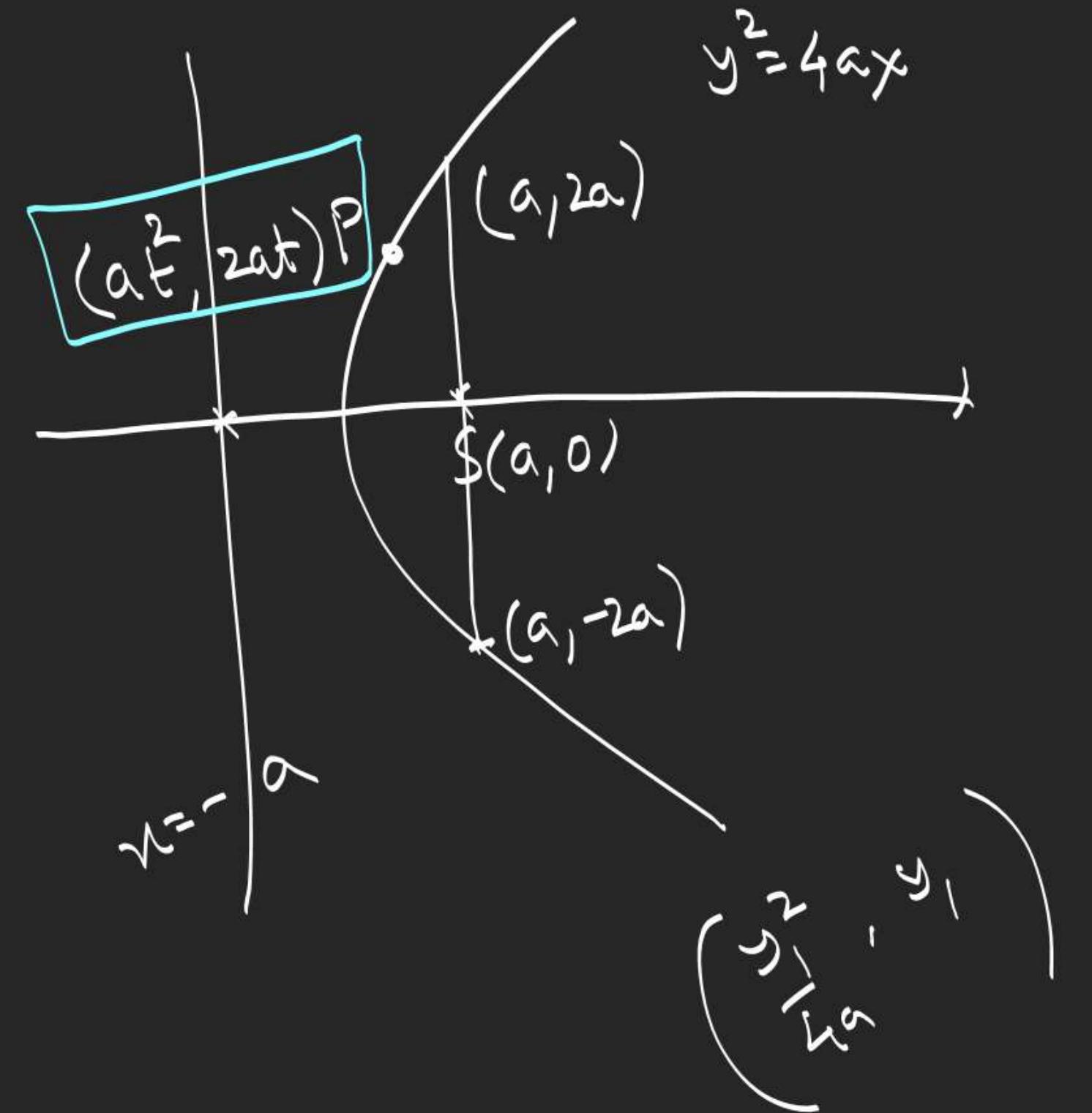


Q. For some parabola, tangent at vertex is

$3x - 4y = 5$ and its focus is $(1, 2)$. Find the eqn. of parabola
and all standard terms

$$3x - 4y = 15$$

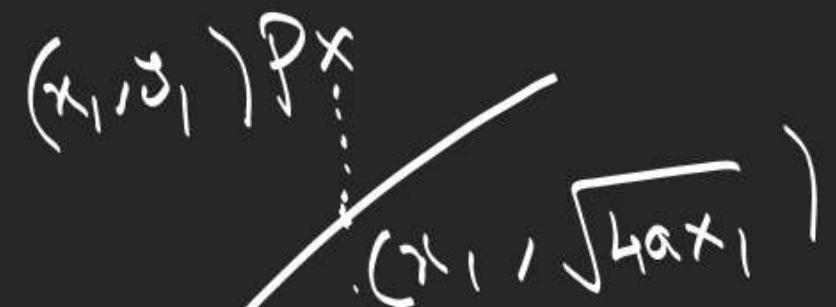




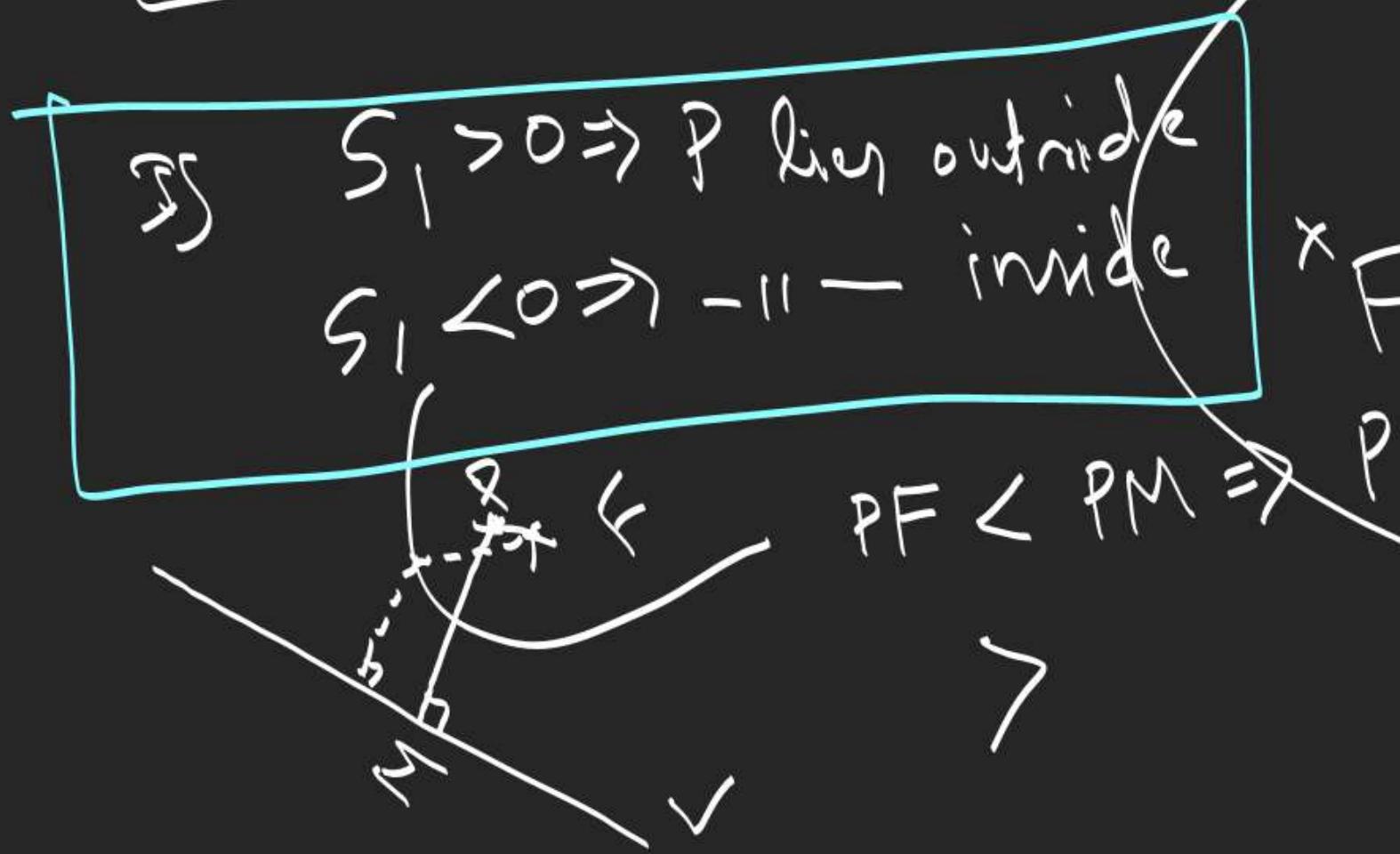
$$y^2 = 4a^2 t^2$$

Position of point with respect
to parabola $y^2 = 4ax$.

$$S = y^2 - 4ax$$



$$|y_1| > \sqrt{4ax_1}$$

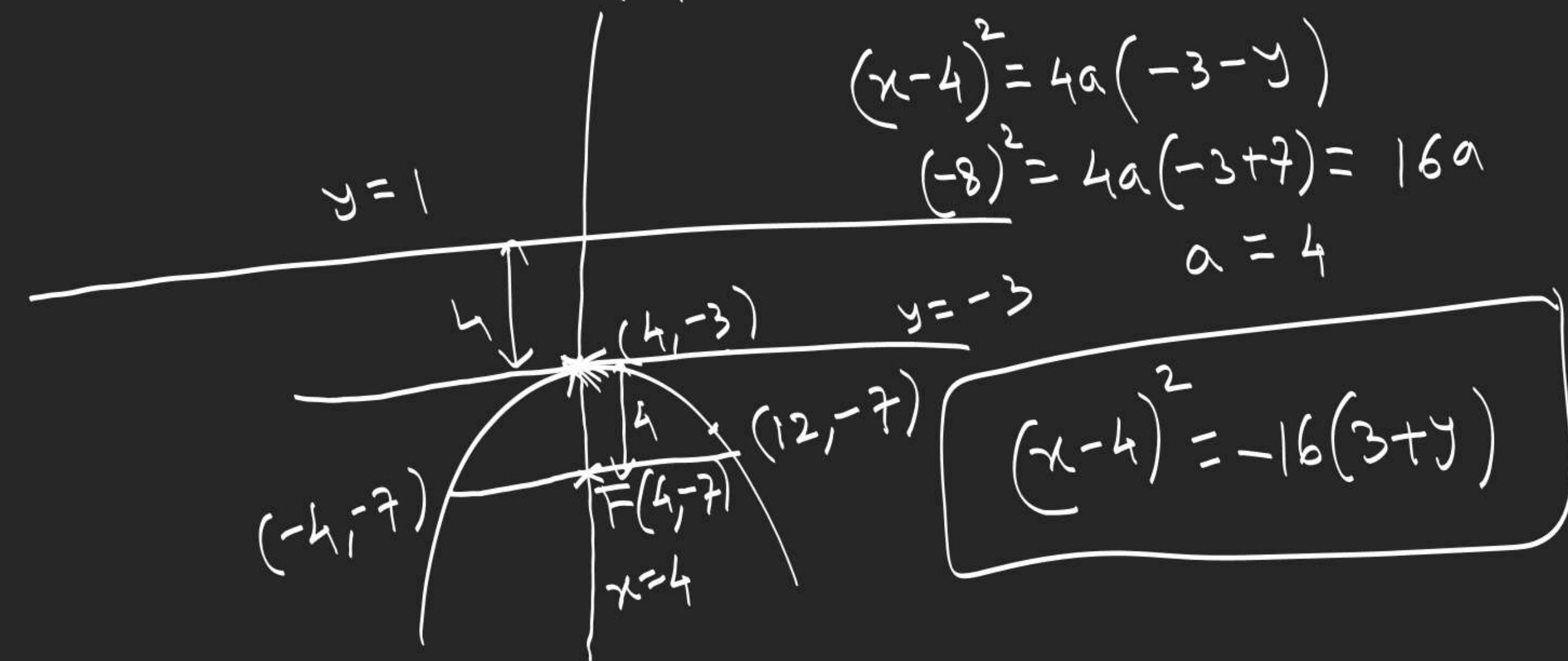


$$y_1^2 > 4ax_1$$

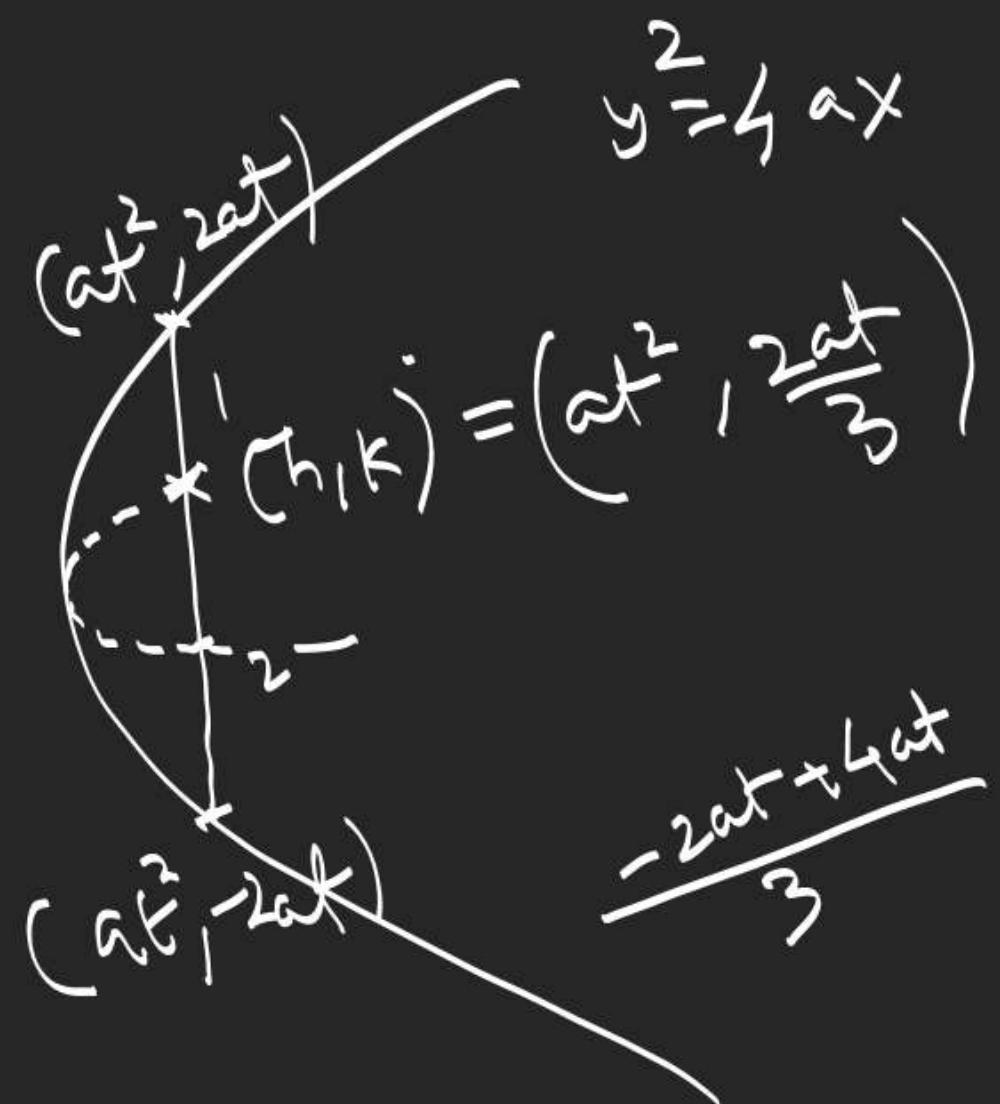
$$y_1^2 - 4ax_1 > 0$$

$\Rightarrow P$ lies outside

3. Find the eqn. of parabola passing thru point $(-4, -7)$ and whose directrix is parallel to x -axis and whose vertex is $(4, -3)$.



4. Find the locus of point of trisection of double ordinates of the parabola $y^2 = 4ax$.



$$\begin{aligned} h &= at^2 \\ k &= \frac{2at}{3} \\ \frac{k^2}{h} &= \frac{4a}{9} \end{aligned}$$

6

$$y^2 = \frac{4a}{9}x$$