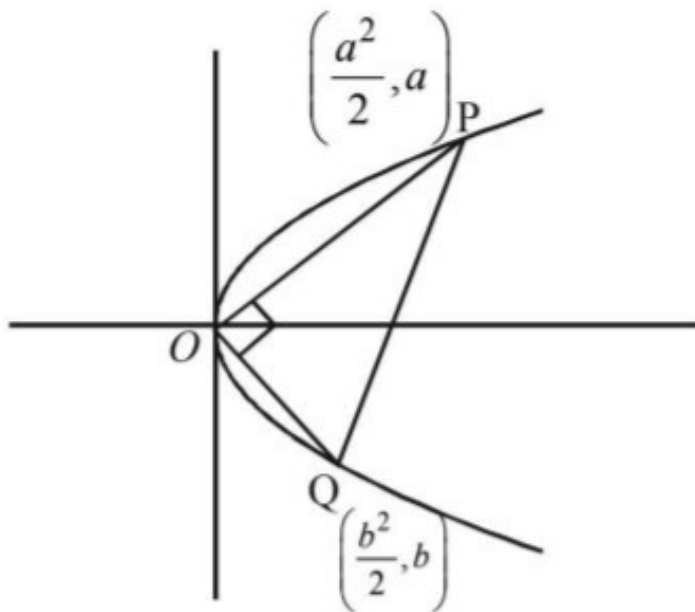


9. (a, d) Let point P in first quadrant, lying on parabola $y^2 = 2x$ be $\left(\frac{a^2}{2}, a\right)$. Let Q be the point $\left(\frac{b^2}{2}, b\right)$. Clearly $a > 0$.



$\therefore PQ$ is the diameter of circle through P, O, Q

$$\therefore \angle POQ = 90^\circ \Rightarrow \frac{a}{a^2/2} \times \frac{b}{b^2/2} = -1 \Rightarrow ab = -4$$

$\Rightarrow b$ is negative.

Also ar. $\Delta POQ = 3\sqrt{2}$

$$\Rightarrow \frac{1}{2} \begin{vmatrix} 0 & 0 & 1 \\ \frac{a^2}{2} & a & 1 \\ \frac{b^2}{2} & b & 1 \end{vmatrix} = 3\sqrt{2}$$