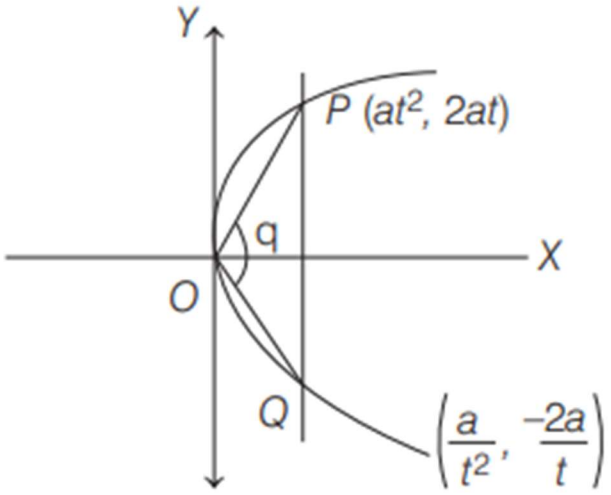
6. If chord PQ subtends an angle θ at the vertex of $y^2 = 4ax$, then $\tan\theta$ is equal to

(a) $\frac{2}{3}\sqrt{7}$ (b) $\frac{-2}{3}\sqrt{7}$

(c) $\frac{2}{3}\sqrt{5}$ (d) $\frac{-2}{3}\sqrt{5}$

Solution: -

6. $m_{OP} = \dfrac{2at - 0}{at^2 - 0} = \dfrac{2}{t}$



$$m_{OQ} = \frac{-2a/t}{a/t^2} = -2t$$

$$\therefore \qquad \tan\theta = \frac{\frac{2}{t} + 2t}{1 - \frac{2}{t}\cdot 2t} = \frac{2\left(t + \frac{1}{t}\right)}{1 - 4} = \frac{-2\sqrt{5}}{3}$$

where $\quad t + \dfrac{1}{t} = \sqrt{5}$