

Answer on Question#40419 – Physics - Mechanics | Kinematics | Dynamics

the particle is projected with $v=6i+3xj$. find eqn of path followed

a. $y=x^2(2\text{-square})$

b. $y=2x^2$

c. $y=1/2x^2$

Solution:

Velocity of the particle:

$$\vec{v} = \vec{v}_x + \vec{v}_y = v_x \vec{i} + v_y \vec{j} = 6\vec{i} + 3x\vec{j}$$

$$v_x = 6 \Rightarrow x = 6t$$

$$v_y = 3x = 3 \cdot 6t = 18t \Rightarrow y = 18t \cdot t = 18t^2$$

$$y = \frac{x^2}{2} \left(\text{because } \frac{(6t)^2}{2} = \frac{36t^2}{2} = 18t^2 \right)$$

Answer: a. $y = x^2$