

Mathematics Questions by Topic

Motion and Force

Answer 45

Source: K7SM2SQ16

Question 45

A particle travels in a straight line with velocity v at a time t and its displacement is x .
If $v^2 = 9x$ for $x > 0$, then the acceleration of the particle is given by

- A. $\frac{2x}{3}$
- B. 4.5
- C. $2\sqrt{x^3}$
- D. $6x^2$
- E. $\frac{3}{2\sqrt{x}}$

ANSWER B

$v^2 = 9x$ for $x > 0$,
differentiating implicitly with respect to x , gives

$$2v \frac{dv}{dx} = 9$$

so that $a = v \frac{dv}{dx} = \frac{9}{2} = 4.5$