

DIFFERENTIATION & APPLICATIONS (Q 6 & 7, PAPER 1)

LESSON NO. 12: RATES OF CHANGE

2004

7 (a) An object's distance from a fixed point is given by $s = 12 + 24t - 3t^2$, where s is in metres and t is in seconds. Find the speed of the object when $t = 3$ seconds.

SOLUTION

$$s = 12 + 24t - 3t^2 \Rightarrow v = \frac{ds}{dt} = 24 - 6t$$

$$v = \frac{ds}{dt} \dots\dots 14$$

$$\left(\frac{ds}{dt}\right)_{t=3} = 24 - 6(3) = 6 \text{ m s}^{-1}$$