

Assignment

① $x = (4t - 3t^2)$ m/s when t is sec
i) find position when $t = 4$ s

ii) $s = 0$

iii) $t = 0$

soln

$$s = \int (v)$$

$$= \int 4t - 3t^2 = \frac{4t^2}{2} - \frac{3t^3}{3}$$

$$s = 2t^2 - t^3 \text{ @ } t = 4$$

$$s = 2(4)^2 - (4)^3 = 4 \text{ m}$$

ii) $s = 0$

iii) $s = 2t^2 - t^3 \text{ @ } t = 0$

$$s = 2(0)^2 - (0)^3$$

$$s = 2(0) - 0$$

$$s = 0$$

$$s = 20 - 0$$

$$s = 0$$

$$\textcircled{2} \quad v = (0.5t^3 - 8t) \text{ m/s}$$

Determine the acceleration when $t = 2$

$$a = \frac{dv}{dt}$$

$$\frac{dv}{dt} = 3 \times 0.5t^2 - 8$$

$$= 1.5(t^2) - 8$$

$$\text{at } t = 2$$

$$= 6 - 8 = -2$$

$$a = -2 \text{ m/s}^2$$

when $t = 4$ sec
 $t = 4$ s

$$\frac{3t^3}{3}$$

4

fm

0

$$\textcircled{2} a = (4t^2 - 2) \text{ m/s}^2$$

Det the position when $t = 4$ s

$$v = \int (a)$$

$$v = \int 4t^2 - 2$$

$$v = \frac{4t^3}{3} - 2t$$

$$\dot{v} = 1.3t^3 - 2t$$

$$s = \int 1.3t^3 - 2t$$

$$s = \frac{1.3t^4}{4} - 2t^2$$

$$\textcircled{\text{a}} t = 4$$

$$s = \frac{1.3(4)^4}{4} - 2(4)^2$$

$$s = \underline{5 \text{ m}}$$

$$s = \frac{1.3t^4}{4} - 2t^2$$

$$\text{@ } t=4$$

$$s = \frac{1.3(4)^4}{4} - 2(4)^2$$

$$s = 5 \text{ km}$$

$$\text{⊕ } v = (20 - 0.06s)^2$$

Determine the acceleration at $s=15 \text{ m}$

$$a = \frac{\Delta v}{\Delta t}$$

$$a = 0 - 0.055$$

$$\text{@ } s=15$$

$$a = -0.05(15)$$

$$a = -0.75 \text{ m/s}^2$$