

~~WMA~~
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1) For Figure 12.3

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

$$s = \int v dt$$

$$s = \int (4t - 3t^2) dt$$

$$= 2t^2 - t^3$$

when $t = 4 \text{ s}$

$$s = 2(4)^2 - (4)^3$$

$$= 32 - 64$$

$$= -32 \text{ m}$$

2) Figure 12.4

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

$$A = dv/dt \text{ (velocity/time)}$$

$$A = 1.5t^2 - 8$$

$$= 6 - 8 = -2 \text{ m/s}$$

③ For figure 12.7

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

$$v = \int A dt$$

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

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

$$s = \int v dt$$

$$= \int \left(\frac{4t^3}{3} - 2t + c \right) dt$$

$$= \frac{4t^4}{12} - \frac{2t^2}{2} + ct$$

$$P = \frac{1}{3}t^4 - t^2 + ct + k$$

when $t = 0$ $P = 2$

$$-2 = \frac{1}{3}(0)^4 - (0)^2 + c(0) + k$$

$$k = -2$$

when $t = 2$ $P = 20$ $k = -2$

$$-20 = \frac{1}{3}(2)^4 - 2^2 + c(2) - 2$$

$$c = 9.7$$

$$P = \frac{1}{3}t^4 - t^2 - 9.7t - 2$$

when $t = 4$

$$P = \frac{1}{3}(4)^4 - 4^2 - (9.7 \times 4) - 2$$

$$P = 28.7 \text{ m/s}$$

④ For Figure 12.7

$$v = (20 - 0.5s) \text{ m/s}$$

$$dt = \frac{ds}{v} \text{ and } dt = \frac{dv}{a}$$

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

$$A = (0.1s)(20 - 0.05s^2)$$

when $s = 15$

$$A = (-0.1 \times 15)(20 - 0.05 \times 15^2)$$

$$A = -13.125 \text{ m/s}^2$$

$$A = (-0.1 \times 15)(20 - 0.05 \times 15^2)$$

$$(15^3)$$

$$A = -13.12 \text{ m/s}^2$$