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 18/ENIG021016 Computer Eng

①  $0 \leq t \leq 5$  (F12-12)

$$s = 3t^2$$

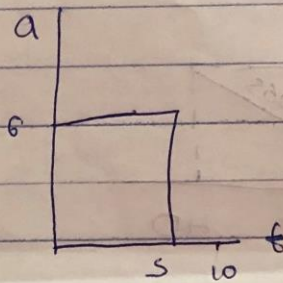
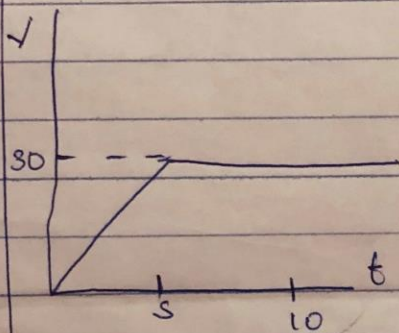
$$v = 6t$$

$$a = 6$$

$5 < t \leq 10$

$$s = 30t - 75$$

$$v = 30$$

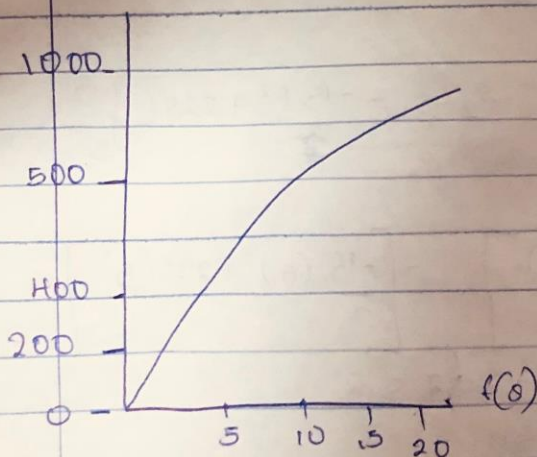


②  $v = -4t + 80$  (F12-9)

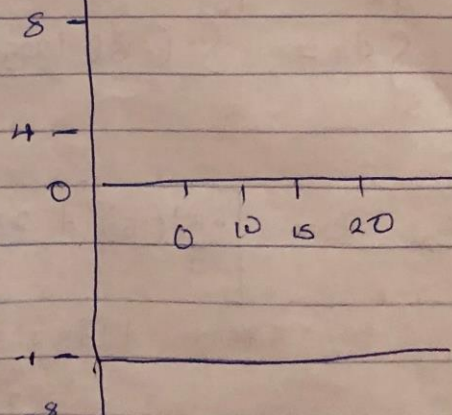
$$s = -2t^2 + 80t$$

$$a = -4$$

s (ft)



(ft/s)



$$(3) \quad a ds = v du \quad (\text{F12-11})$$

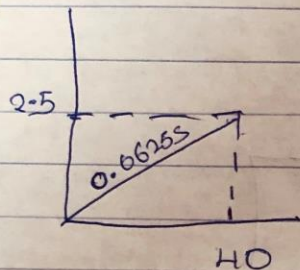
$$a = \frac{u du}{ds}$$

$$= 0.25s \frac{d(0.25s)}{ds}$$

$$= (0.25s)(0.25)$$

$$= 0.0625s$$

$v(\text{m/s})$



$$(4) \quad 0 \leq t \leq 5s \quad v = 30t$$

(F12-13)

$$5 \leq t \leq 15s \quad v = -15t + 225$$

$$v = \frac{ds}{dt} \quad ds = v dt$$

$$\int_0^{s_1} ds = \int_0^{5s} 30t dt \quad s_1 = \frac{30t^2}{2} \Big|_0^{5s} = 15(5s)^2 = 375$$

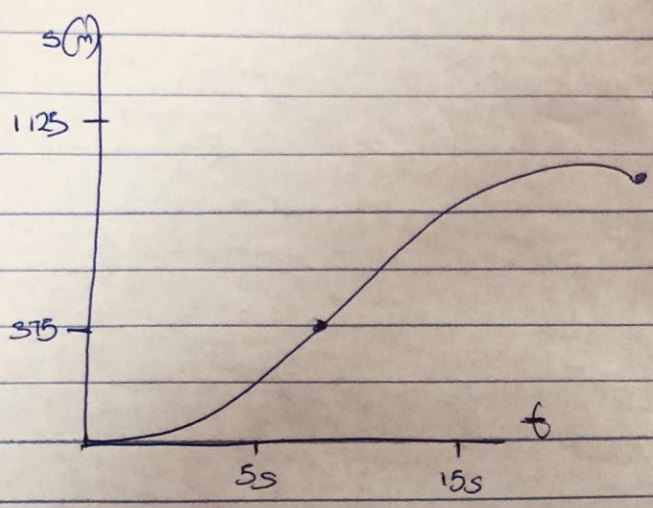
$$\int_{s_1}^{s_2} ds = \int_5^{15s} (-15t + 225) dt \quad s_2 - s_1 = \left[ -\frac{15}{2}t^2 + 225t \right]_5^{15}$$

$$s_2 - 375 \text{ m} = \left[ \frac{-15(15)^2 + 225(15)}{2} \right] - \left[ \frac{-15(5)^2 + 225(5)}{2} \right]$$

$$s_2 = 375 \text{ m} + 1687.5 \text{ m} - 937.5 \text{ m}$$

$$s_2 = 1125 \text{ m}$$





It is linear than  $s-t$  is quadratic.

5.