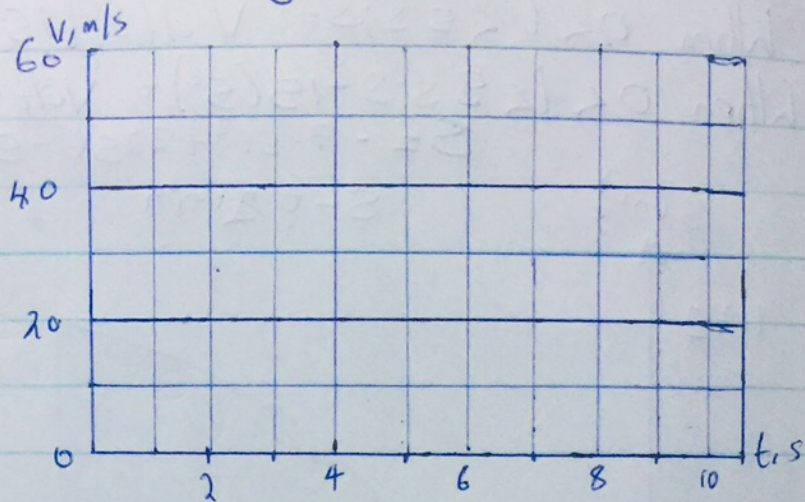


NAME - OLUWAFEMI OLORUNSOGO BENJAMIN  
MATIC NO - 18/EM606/059  
DEPARTMENT - MECHANICAL ENGINEERING

1) F12-9

Construct the  $v-t$  graph for the same interval.



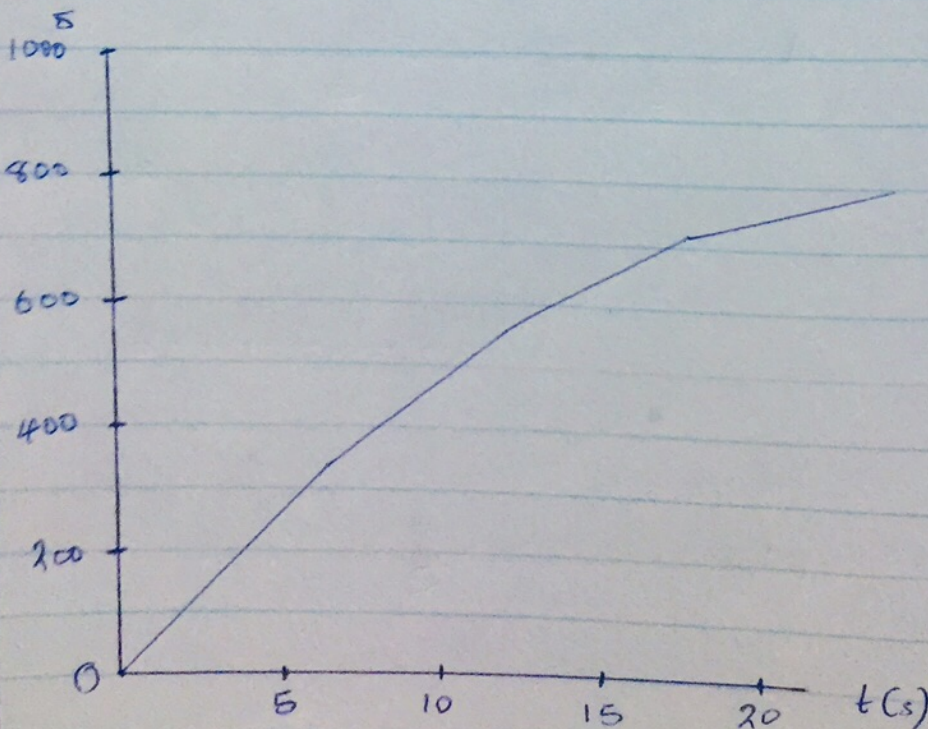
2) F12-10

Solution

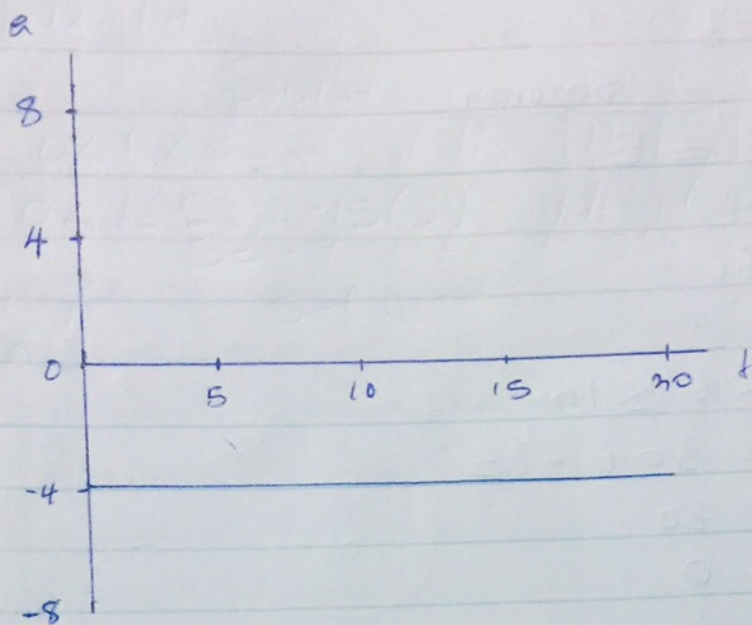
$$v = -4t + 80$$

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

$$a = -4$$







37 F 12-11

Solution

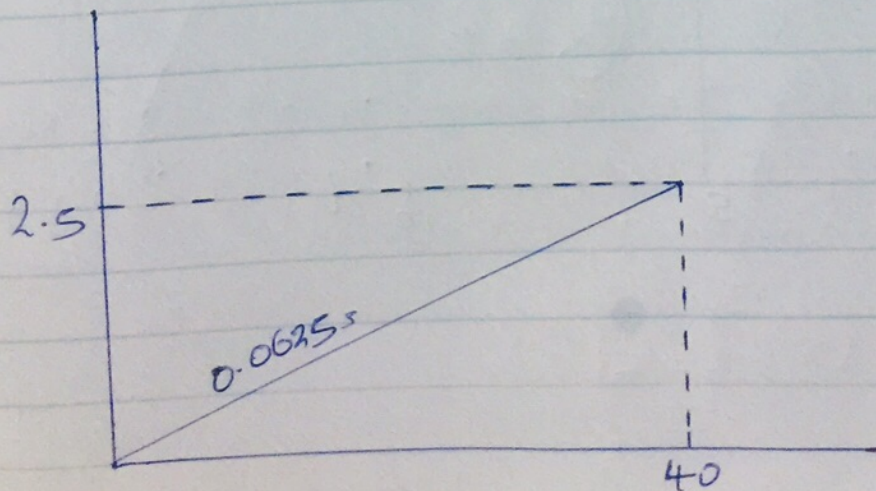
$$a ds = v du$$

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

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

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

$$= 0.0625s$$





4] F12-12

Solution

$$0 \leq t \leq 5$$

$$s = 3t^2$$

$$v = 6t$$

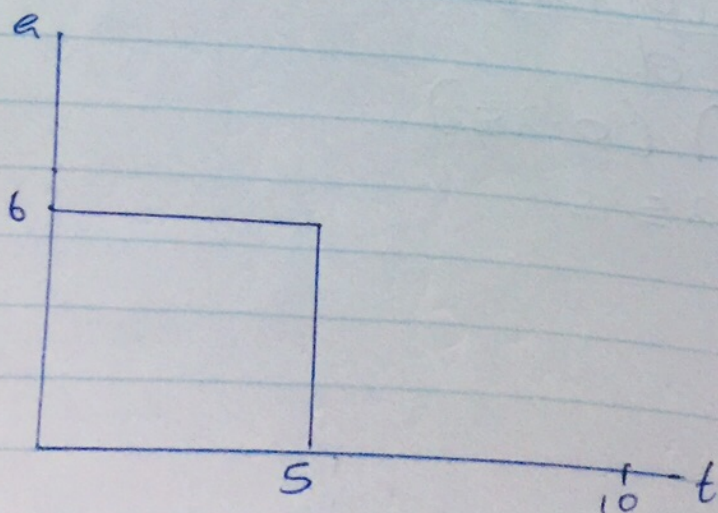
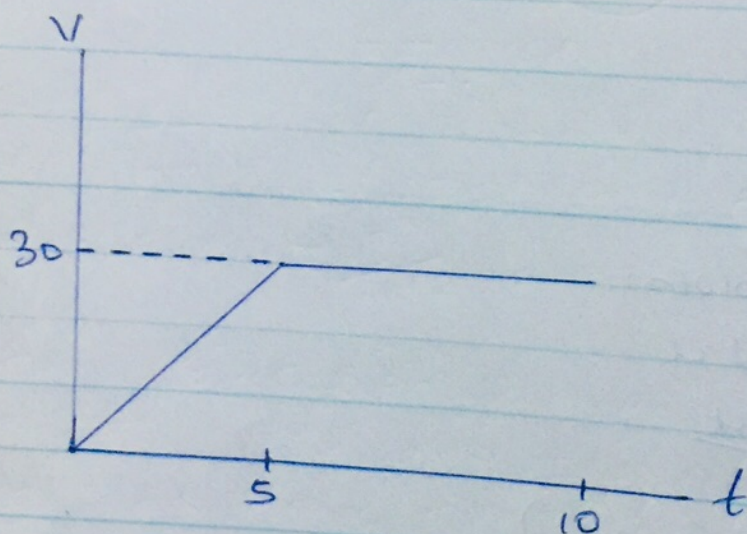
$$a = 6$$

$$5 < t \leq 10$$

$$s = 30t - 75$$

$$v = 30$$

$$a = 0$$





5)

F 12-13SolutionFor the time interval  $5 < t \leq t'$ 

$$dv = a dt$$

$$\int_{400}^{v} dv = \int_{5s}^{t'} (-t + 5) dt$$

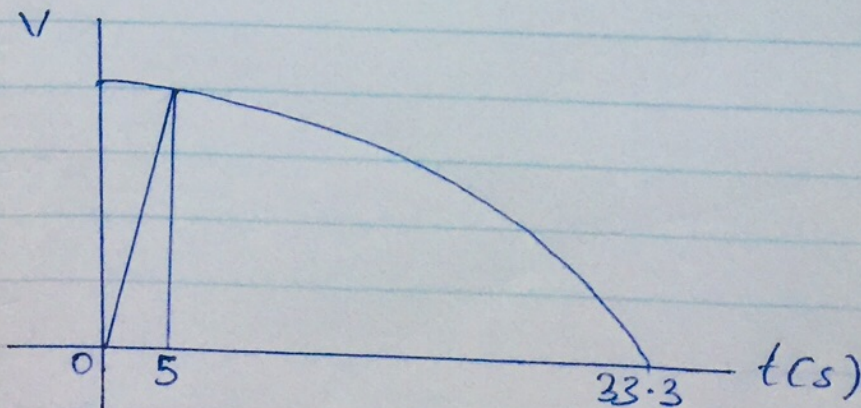
$$v = \left( \frac{t^2}{2} + 5t + 387.5 \right) \text{ ft/s}$$

When  $v = 0$ 

$$0 = \frac{t'^2}{2} + 5t' + 387.5$$

Choosing the positive root,

$$t' = 33.385 = 33.3s$$





6) F12-14

Solution

When  $0 < t < 5$  s;  $s = \int v dt = [15 t^2] = 15t^2$  m

When  $0 < t < 5$  s;  $s = 15(5^2) = v t = [(-15)(\frac{1}{2})t^2 + 225t]$   
 $s = -7.5t^2 + 225t - 562.5$  m

