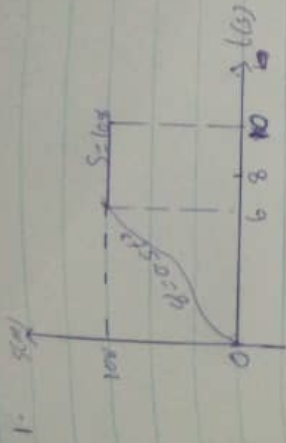


NAME - ANE FATH OUMARIN
 MTRIC NO - 18124604/019
 Course - Engineering mechanics
 Department - Elect Tech



$$v = ds/dt$$

$$v = 1.5t^2$$

$$\text{at } t = 6s$$

$$v = 1.5 \times 6^2$$

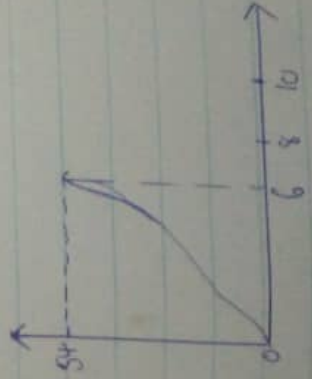
$$v = 1.5 \times 36$$

$$v = 54 \text{ m/s}$$

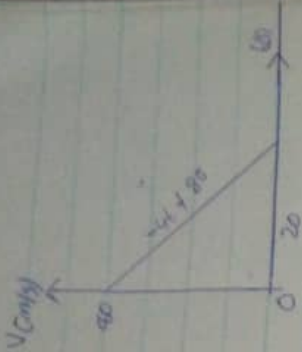
$$\text{from } t = 6s - 10s$$

$$s = 108, v = 0$$

v-t graph



2)



$$s = \int v dt$$

$$s = \int (40 - 4t) dt$$

$$s = -2t^2 + 40t$$

$$\text{at } t = 20s$$

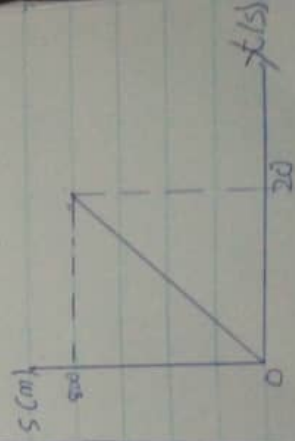
$$s = -2(20)^2 + 40(20)$$

$$s = -2(400) + 1600$$

$$s = -800 + 1600$$

$$s = 800 \text{ m}$$

s-t graph



(iii) acceleration

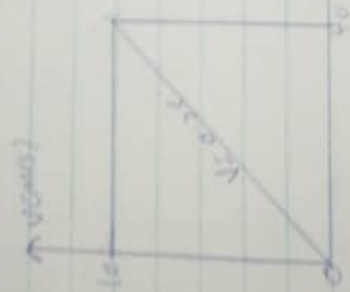
$$a = dv/dt$$

$a = -4 \text{ m/s}^2$
at $t = 25$, $a = -4 \text{ m/s}^2$

a-t graph
 $a \text{ (m/s}^2\text{)}$

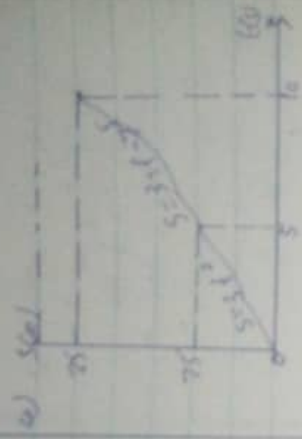


3

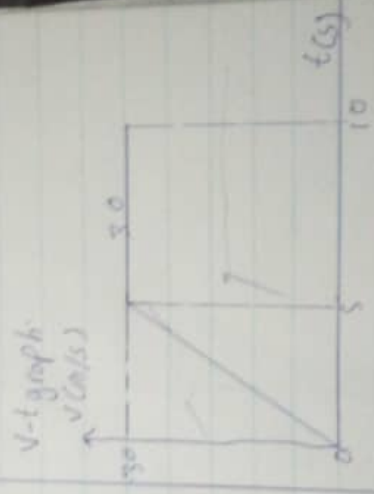


$a = 0.25 \text{ m/s}^2$
 $v = 0.25t$
 $a = 10 \times 40 = 25 \text{ m/s}$
 $a = 10 \times 40 = 25$
 $a = 2.5 \text{ m/s}^2$

a-t graph
 $a \text{ (m/s}^2\text{)}$

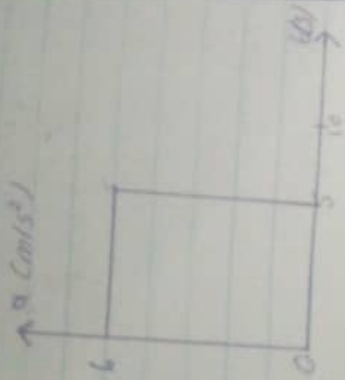


$v = at$
at $t = 5$
 $v = 6 \times 5 = 30 \text{ m/s}$
at $t = 10$
 $v = 30 \text{ m/s}$

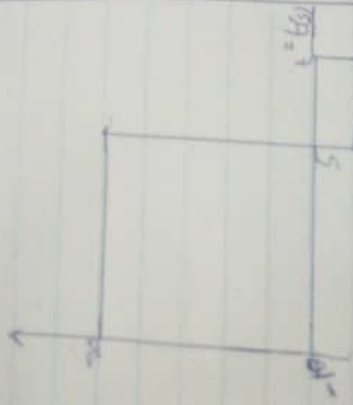


$a = \frac{dv}{dt}$
at $t = 5$
 $a = 6 \text{ m/s}^2$
at $t = 10$
 $a = 6 \text{ m/s}^2$

a-t graph



5) a(s)



① $v = \int a dt$

$$v = \int 20 dt$$

$$v = 20t$$

$$at t = 5s$$

$$v = 20 \times 5 = 100 \text{ m/s}$$

$$-5s < t \leq 10s$$

$$\int 100 dt = \int 0^5 -10 dt$$

$$v = 100t = -10t^2 \Big|_5^{10}$$

$$v = 100 \times 5 = 500 \text{ (m/s)}$$

$$v = 100 \times 5 - 10 \times 5^2 + 50$$

$$at t = 0, v = 0$$

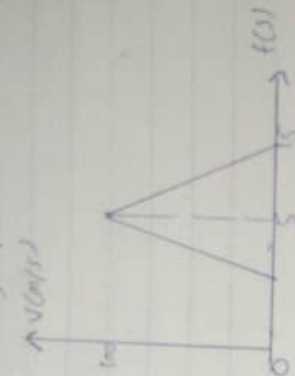
$$a = 100 \Rightarrow -10t + 50$$

$$-10t = -100 - 50$$

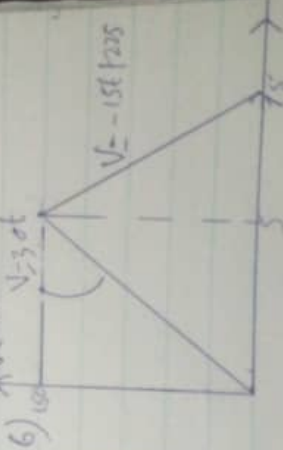
$$-10t = -150$$

$$t = 15s$$

v-t graph



v (cm/s)



$0 \leq t < 5s$

$v = 20t$

$$\int_0^5 20 ds = \int_0^5 30 dt$$

$$s = 15t^2 / 2$$

$$s = 15(5)^2 = 15 \cdot 0.2$$

$$s = 15 \times 25$$

$$\therefore s = 375 \text{ m}$$

$$s_1 \leq t \leq 15s$$

$$V = -156t + 225$$

$$\int_{375}^s ds = \int_5^{15} (-15t + 225) dt$$

$$s - 375 = \frac{-15t^2}{2} + 225t \Big|_5^s$$

$$s - 375 \left[\frac{-15 \times 225 + 375}{2} \right] - \left[\frac{15 \times 25 + 1125}{2} \right]$$

$$s - 375 = 1687.5 - 937.5$$

$$s - 375 = 750$$

$$s = 750 + 375$$

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