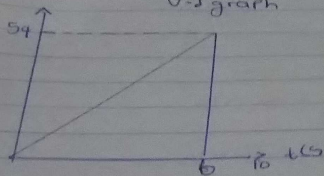


Name = GREEN EMMAHUEL EBITIPU
 Mat no = 1612051029
 Dept = Civil engineering

1. $s = 0.5t^2$
 $v = \frac{ds}{dt} = 1.0t \text{ m/s}$

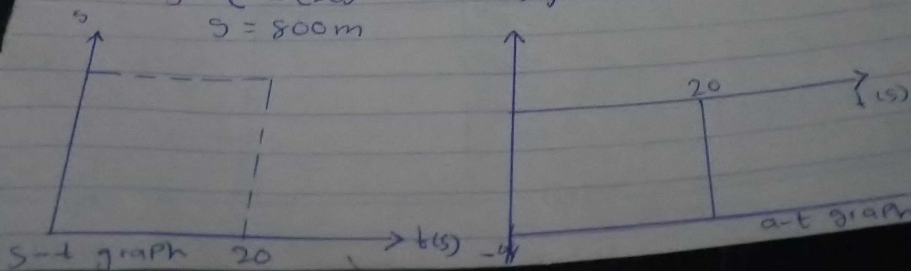
a) $t = 6$
 $v = 1.0(6)^2 = 54 \text{ m/s}$
 $s = 108$
 $v = \frac{ds}{dt}; v = 0 \text{ m/s}$

v-t graph



2) $v = -4t + 80$
 $a = \frac{dv}{dt} = -4 \text{ m/s}^2; \text{ at } t = 20 \quad a = 4 \text{ m/s}^2$

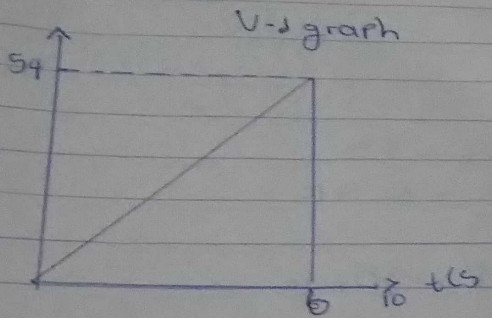
$s = \int v dt \int_0^{20} (-2t^2 + 80t)$
 $s = (-2(20)^2 + 80(20)) - (-2(0)^2 + 80(0))$
 $s = 800 \text{ m}$



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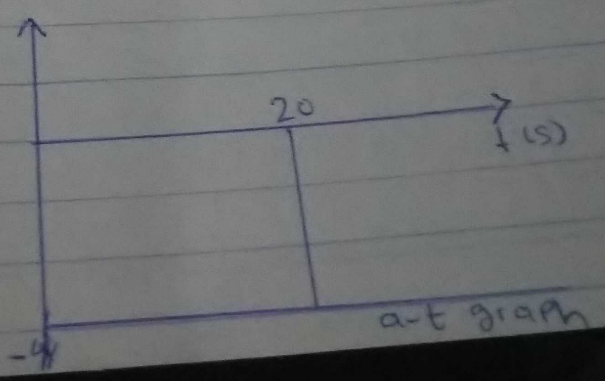
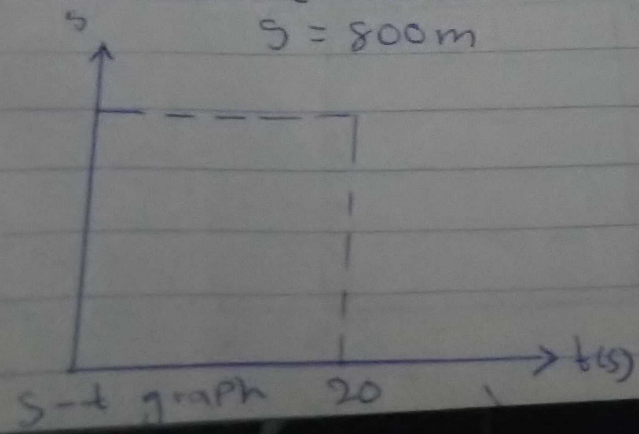
1. $s = 0.9t^2$
 $v = \frac{ds}{dt} = 1.8t \text{ m/s}$

a) $t = 6$
 $v = 1.8(6) = 10.8 \text{ m/s}$
 $s = 0.9(6)^2 = 32.4 \text{ m}$
 $v = \frac{ds}{dt}; v = 0 \text{ m/s}$

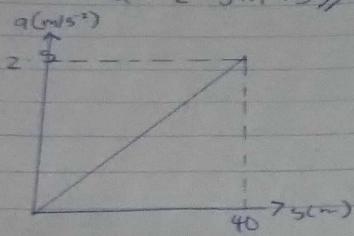


2) $v = -4t + 80$
 $a = \frac{dv}{dt} = -4 \text{ m/s}^2; \text{ a) } t = 20 \quad a = -4 \text{ m/s}^2$

$s = \int v dt = (-2t^2 + 80t)$
 $s = (-2(20)^2 + 80(20)) - (-2(0)^2 + 80(0))$
 $s = 800 \text{ m}$

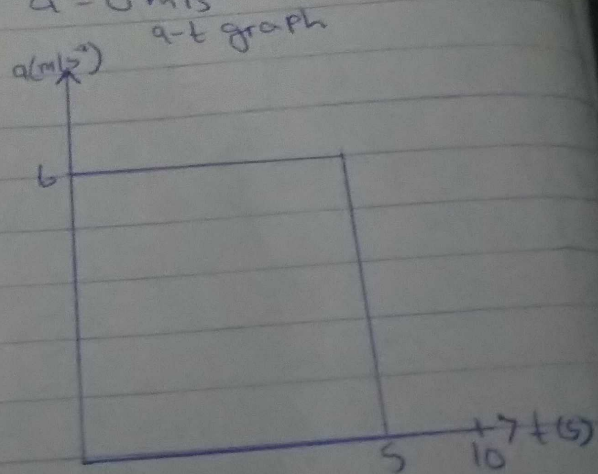
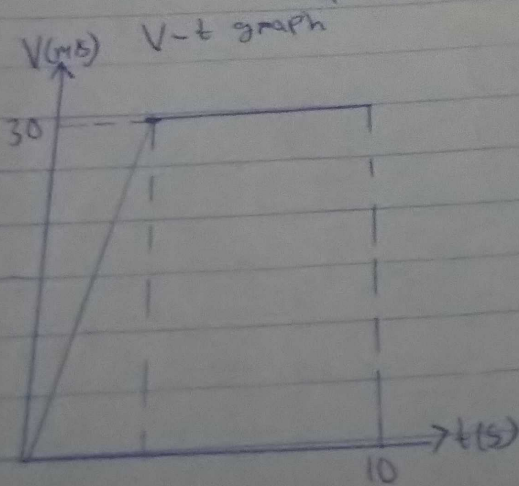


3. $v = 0.25s$
 $a = v \left(\frac{dv}{ds} \right) \therefore a = 0.25 \cdot 0.25$
 $a = (0.0625) \text{ m/s}^2$
 a) $s = 40 \text{ m}$
 $a = (0.0625(40))$
 $a = 2.5 \text{ m/s}^2 //$



4. $s = 3t^2$; $s = 30t - 75$
 $v = \frac{ds}{dt} ; 6t$; $v = \frac{ds}{dt} = 30 \text{ m/s}$
 $\therefore \text{at } t = 5$; $v_2 = 30 \text{ m/s}$
 $v = 6(5) = 30 \text{ m/s}$

$a = \frac{dv}{dt} \therefore v = 6t$; $v = 30 \text{ m/s}^2$
 $a = 6 \text{ m/s}^2$; $a = 0 \text{ m/s}^2$



$$a = 20 \text{ m/s}^2 \quad a = 10 \text{ m/s}^2$$

$$\int dy = \int a dt$$

$$\int_0^v dv = \int_0^t 20 dt$$

$$V = 20t$$

$$\textcircled{a} t = 5$$

$$V = 100 \text{ m/s}$$

$$\int_{100}^0 dv = \int_5^t -10 dt$$

$$V = 100 = 10(t - 5)$$

$$V = 100 = -10t + 50$$

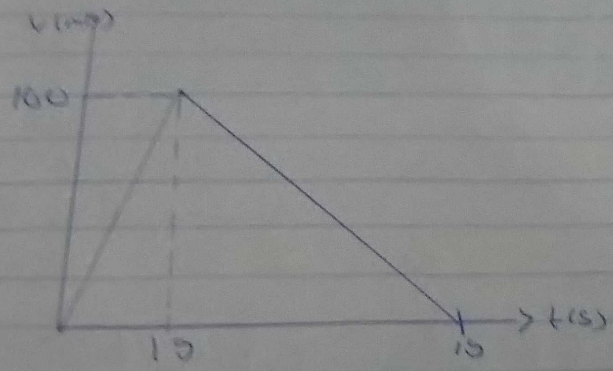
$$V = (-10t + 150) \text{ m/s}$$

$$\textcircled{a} V = 0$$

$$0 = -10t + 150$$

$$-150 = -10t$$

$$t = 15 \text{ s (for carts come to rest)}$$



$$V = 30t$$

$$s = \int v dt = (15t + 2)t^2$$

$$\textcircled{a} t = 5$$

$$= 15(5)^2$$

$$= 375 \text{ m}$$

$$V = -15t + 225$$

$$s = \int v dt = -7.5t^2 + 225t$$

$$\textcircled{a} t = t_2 - t_1 = 15 - 5 = 10$$

$$\textcircled{a} t = 70$$

$$-7.5(10) + (225)(40)$$

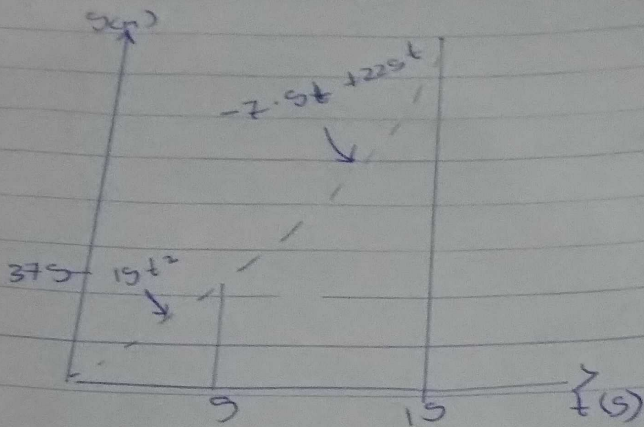
$$= 1300 \text{ m}$$



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$$\therefore \text{total distance travelled} \\ = 375 + 150 = 525 \text{ m}$$



s-t graph