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 ELECTRICIAN

1)  $s_2 = 0.5t^3$

Velocity  $2.10 \text{ m/s}^2$

when  $t = 2.6$ , when  $t = 2.0$

$s_2 = 10x$  when  $t = 0$

$v_2 = 1.5(2.6)^2 = 2.0$

when  $t = 2.6$

$v = 1.5(2.6)^2 = 2.10 \text{ m/s}^2$

when  $t = 2.8$  and  $t = 2.0$

$s_2 = 10x$   $v_2 = 0$

$v = 0$  graph



when  $t = 2.2$

$v_2 = 1.5(2.2)^2 = 2.6 \text{ m/s}$

when  $t = 2.2$

$v_2(0.5)(2.2)^2 = 2.5 \text{ m/s}$

2)  $v_2 = 4t^2 - 18t$

$s_2 = \int -4t^2 - 18t$

$s_2 = -2t^3 - 9t^2 + 18t + C$

when  $t = 0, s_2 = 0$

$0 = -2(0)^3 - 9(0)^2 + 18(0) + C$

$0 = 0 + 0 + 0 + C$

$C = 0$

when  $t = 0$

$s_2 = -2(0)^3 - 9(0)^2 + 18(0) + 0$

$s_2 = 0$

$s_2 = 0$

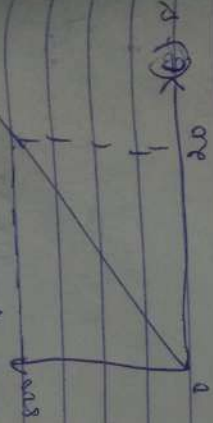
when  $t = 2.0$

$s_2 = 1.5(2.0)^2 + 18(2.0) + 0$

$s_2 = 6.0 + 36.0 + 0$

$s_2 = 42.0 \text{ m}$

$s = 0$  graph



finding  $a = 6$  graph

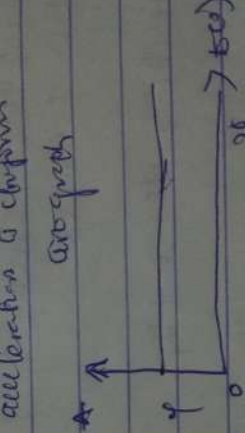
$v_2 = 4t^2 - 18t$

$a_2 = \frac{dv_2}{dt} = -4$

acceleration is  $4 \text{ m/s}^2$

acceleration is constant

area graph



3)  $v_2 = 0.25t^5$

$a_2 = \frac{dv_2}{dt} = 0.25(5t^4) = 1.25t^4$

when  $s_2 = 0$

$a_2 = 0$

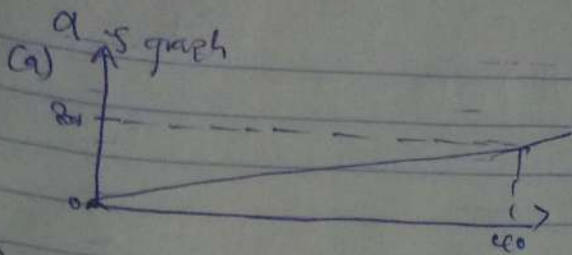
$s_2 = 10$

$a_2 = 0$

$s_2 = 10$

$a_2 = 0.25(5(10)^4)$

$a_2 = 2.5 \text{ m/s}^2$



(P) For  $t = 5$

$$s = \frac{1}{2} at^2 = \frac{1}{2} \cdot 20 \cdot 5 = 250$$

or when  $t = 5$

$$v = at = 20 \cdot 5 = 100$$

when  $t = 0$

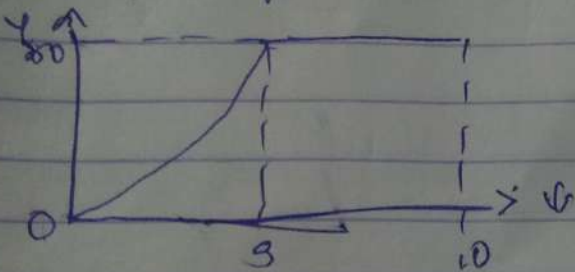
$$v = 0 \quad \therefore a = 20$$

$$s = \frac{1}{2} at^2 = 75, \quad v = 50 \quad \therefore a = 20$$

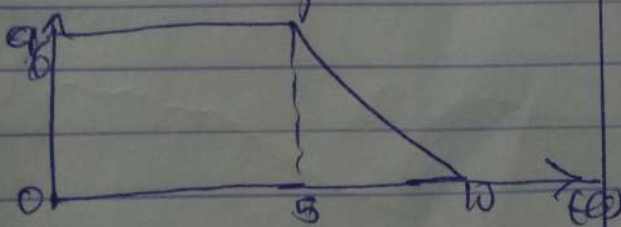
when  $t = 10$

$$s = 225, \quad v = 200 \quad \therefore a = 20$$

$v$ - $t$  graph



$a$ - $t$  graph



(5) acceleration = 20 when  $t = 0$

$$\therefore \text{velocity } s = 20t + c$$

when  $t = 0: t = 0$

$$c = 0 = 20(0) + c$$

$$c = 0$$

when  $t = 0$

$$v = 20(0) + 0 = 0$$

or when  $t = 5$

$$v = \int a dt = \int 20 dt = 20t + c = 50$$

when  $t = 0$

$$a = 20 = \frac{dv}{dt}$$

(b)  $v = 30t$  (from  $0 \leq t \leq 5$ )

$$s = \int v dt = \int 30t dt = 15t^2 + c$$

finding  $c$

when  $s = 0$   $t = 0$

$$0 = 15(0)^2 + c$$

$$c = 0$$

at  $t = 5$

$$s = 15(5)^2 = 375$$

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

$$v = -18t + 225$$

$$s = \int v dt = -9t^2 + 225t + c$$

when  $s = 0$   $t = 0$   $c = 0$

$$0 = -9(0)^2 + 225(0) + c$$

$$c = 0$$

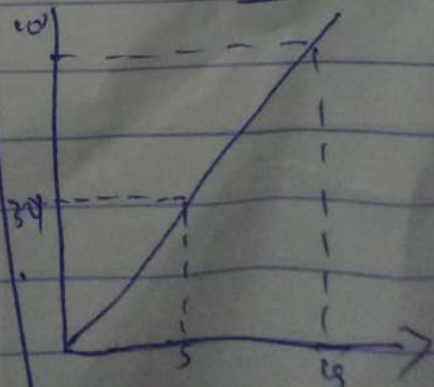
when  $t = 15$

$$s = -9(15)^2 + 225(15) = 0$$

$$s = 1875 \text{ m}$$

Total distance = 1875 m

$s$ - $t$  graph



No 5

$v$   $v^2$

