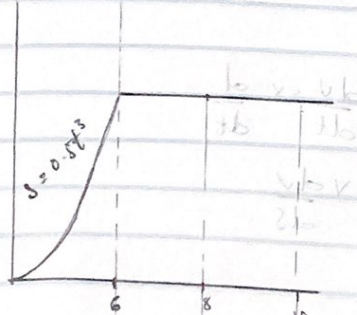


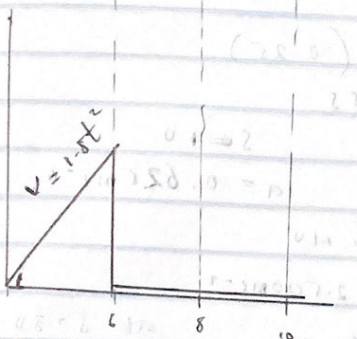
Question 1

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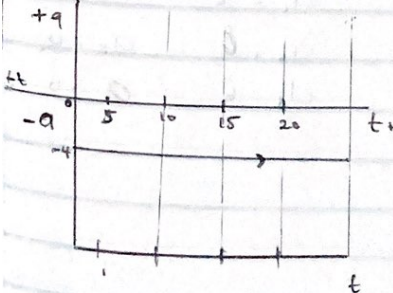
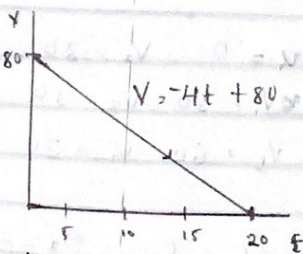
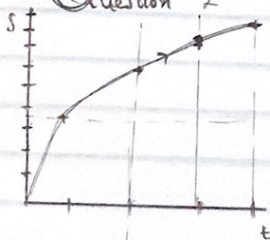


Knowing P
 $V = \frac{\delta s}{\delta t} = \frac{\delta(0.5t^3)}{\delta t}$
 $V = (1.5)t^2$
 at $t = 0$
 $V = (1.5)(0)^2 = 0$
 at $t = 6$
 $V = (1.5)(6)^2 = 54 \text{ ms}^{-1}$
 at $t = 8$
 $V = 0$



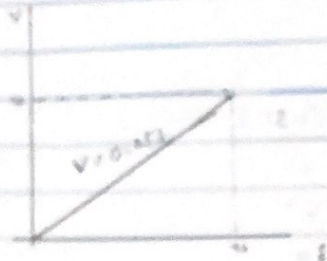
at $t = 0$
 $V = (1.5)(0)^2 = 0$
 at $t = 6$
 $V = (1.5)(6)^2 = 54 \text{ ms}^{-1}$
 at $t = 8$
 $V = 0$

Question 2



$V = \frac{ds}{dt}$
 therefore
 $\int ds = \int v dt$
 $s_1 - s_0 = \int (-4t + 80) dt$
 $ds = -2t^2 + 80t + c$
 at $s = 0$ and $t = 0$
 $0 = -2(0) + 80(0) + c$
 $c = 0$
 $s_1 - s_0 = -2t^2 + 80t$
 at $t = 5$, $s = -50 + 400 = 350$
 at $t = 10$, $s = -200 + 800 = 600$
 at $t = 15$, $s = -450 + 1200 = 750$
 at $t = 20$, $s = -800 + 1600 = 800$
 $a = \frac{dv}{dt} = \frac{d(-4t + 80)}{dt}$
 $a = -4 \text{ ms}^{-2}$

Question 3



$$a = \frac{dv}{dt} = \frac{dv}{ds} \cdot \frac{ds}{dt}$$

$$= v \frac{dv}{ds}$$

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

$$a = (0.1s)(0.1s)$$

$$= 0.01s$$

at $s = 0$ $s = 40$

$$a = 0$$
 $a = 0.62 \text{ m/s}^2$

at $s = 40$

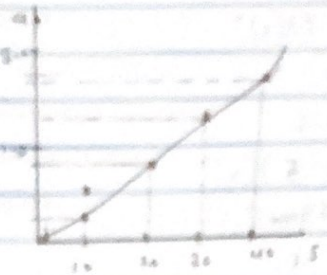
$$a = 2.50 \text{ m/s}^2$$

at $s = 20$

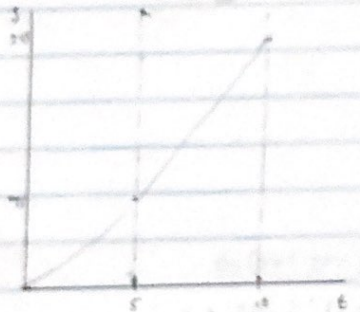
at $s = 30$

$$a = 1.25 \text{ m/s}^2$$

$$a = 1.875$$



Question 4



$$s = 3t^2$$

$$s_2 = 30 = 75$$

$$v_1 = 6t$$

$$v_2 = 30$$

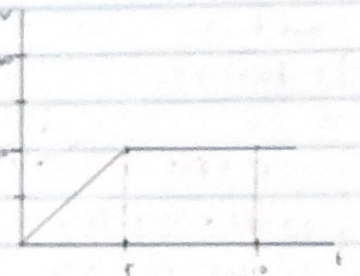
$$a_1 = 6$$

$$a_2 = 0$$

at $t = 0$ $a = 0$ $v_2 = 30$

$t = 5$ $v_1 = 30$ $v_2 = 30$

$t = 10$ $v_1 = 60$ $v_2 = 30$



$t = 0$ $a_1 = 6$ $a_2 = 0$

$t = 5$ $a_1 = 6$ $a_2 = 0$

$t = 10$ $a_1 = 6$ $a_2 = 0$

