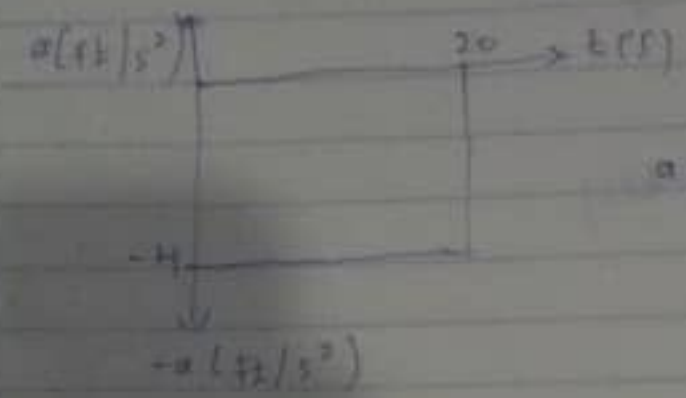
$v = (-4t + 80)\ ft/s$

$a = dv/dt$

$a = -4\ ft/s^2$



a-t graph

5] $v = [0.25s]\ m/s$

$a = v\left(\frac{dv}{ds}\right)$

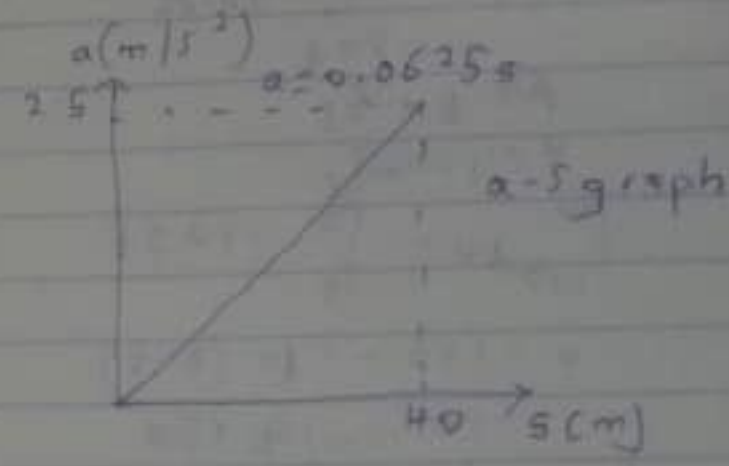
$a = 0.25s(0.25)$

$a = (0.0625)s\ m/s^2$

At $s = 40m$

$a = (0.0625 \times 40)$

$a = 2.5\ m/s^2$



a-s graph

6) $s = 3t^2$

$v = 6t$

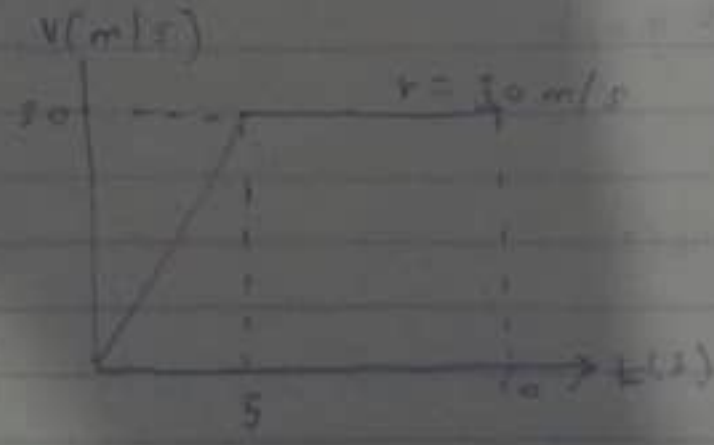
At $t = 5$

$v = 6 \times 5$

$v = 30\ m/s$

$s = 30t - 75$

$v = 30\ m/s$



v-t graph

Ogiba Michael Oghenenyerhovwo
Chemical Engineering
15/ENG01/021
Engineering Mechanics (ENG234)

1) Given that

$s = 0.5t^3\ m$

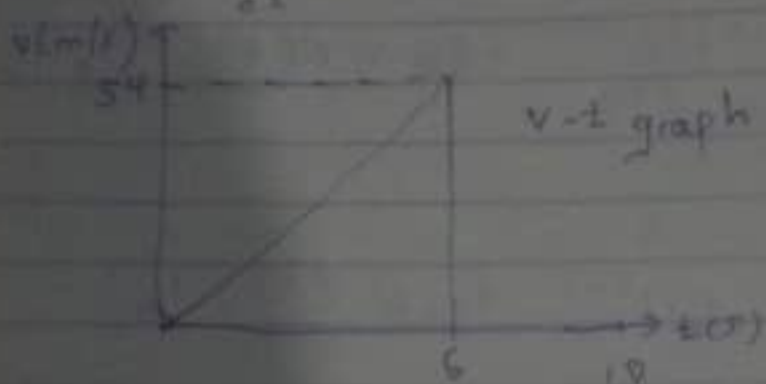
$v = \frac{ds}{dt}$, $v = 1.5t^2$

So at $t = 6$

$v = 1.5(6)^2 = 54\ m/s$

$s_2 = 108\ m$

$v = \frac{ds}{dt} = 0$, $v = 0\ m/s$



v-t graph

2) Given that

$v = -4t + 80$

$s = \int v\, dt$

$s = \int_0^{20} -4t + 80\ dt$

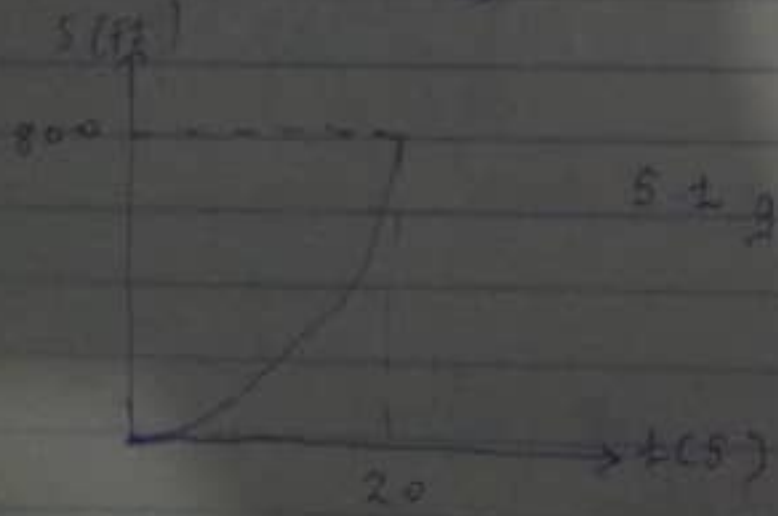
$s = \left[-2t^2 + 80t\right]\Big|_0^{20}$

at $t = 20$

$s = (-20(20)^2 + 80(20))$

$s = -800 + 1600$

$s = 800\ ft$



s-t graph

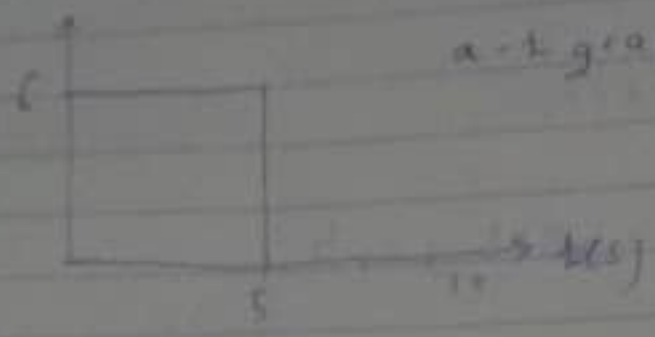
VISTALINE

$v = (6t)\,m/s$

$a = 6\,m/s^2$

$v = 10\,m/s$

$a = 0\,m/s^2$



5) $a = 20\,m/s^2$

$\int dv = \int a \cdot dt$

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

$v = 20t$

At $t = 5s$

$v = 100\,m/s$

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

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

$v - 100 = -10t + 50$

$v = (-10t + 150)\,m/s$

At $v = 0$

$0 = -10t + 150$

$-150 = -10t$

$\therefore t = 15\,sec$ { which is the time for the car to come to rest