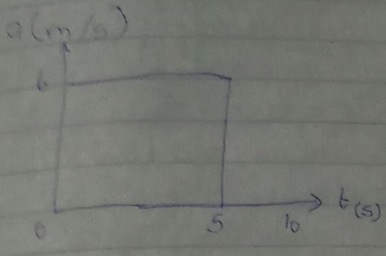
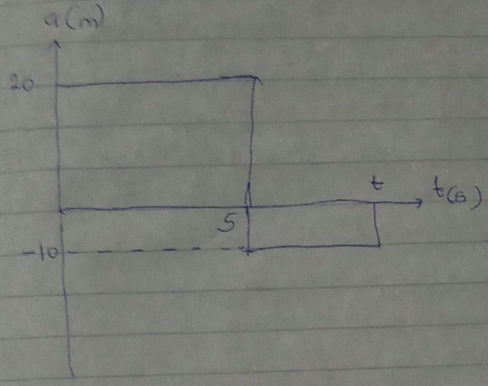
a-t graph



5)



1) $v = \int a\,dt$

$v = \int 20\,dt$

$v = 20t$

at $t = 5s$

$v = 20 \times 5 = 100\ m/s$

$5s < t \leq t$

$\int_{100}^{v} dv = \int_{5}^{t} -10\,dt$

$v - 100 = -10t\,|_5^t$

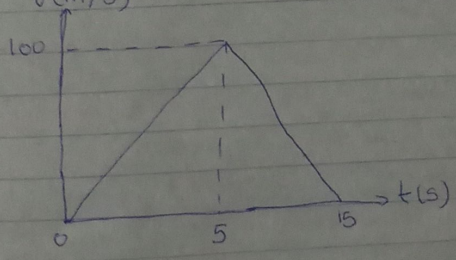
$v - 100 = -10t + 10(5)$

$v - 100 = -10t + 50$

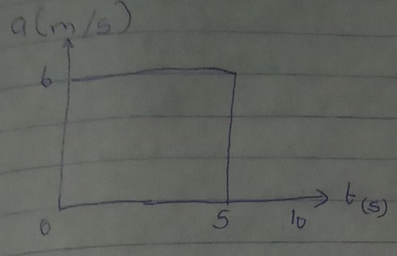
at t $v = 0$

0-

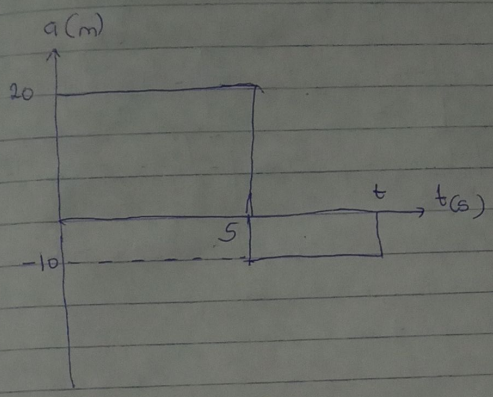
V-t graph



a-t graph



5)



i) $v = \int a\,dt$

$v = \int 20\,dt$

$v = 20t$

at $t = 5s$

$v = 20 \times 5 = 100\ m/s$

$5s < t \leq t$

$\int_{ar}^{v} dv = \int_{5}^{t} -10\,dt$

$v - 100 = -10t\,|_{5}^{t}$

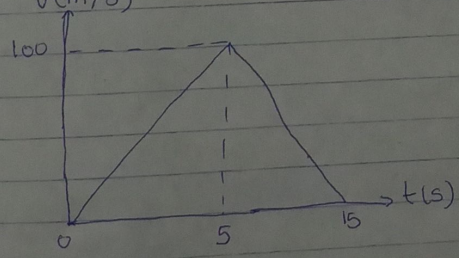
$v - 100 = -10t + 10(5)$

$v - 100 = -10t + 50$

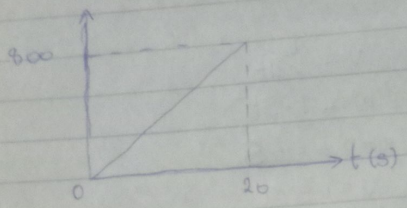
at t $v = 0$

0-

V-t graph



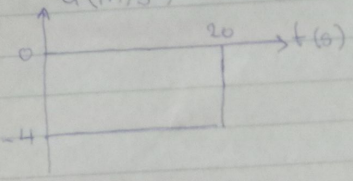
S-t graph



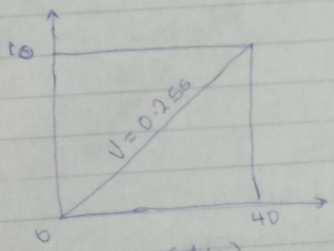
i) $a = \frac{dv}{dt}$

$\therefore a = -4 m/s^2$

a-t graph



3)



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

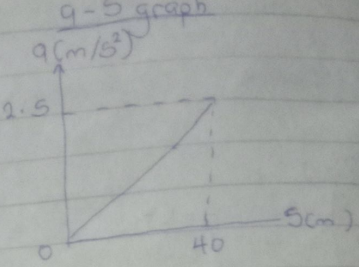
$v = 0.25s$

$a = 10 \times d(0.25s)/ds$

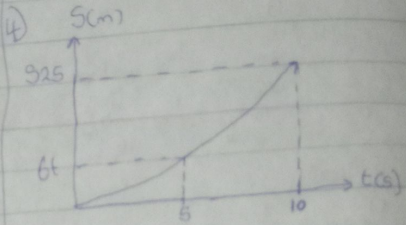
$a = 10 \times 0.25$

$a = 2.5 m/s^2$

a-s graph



4)



$V = ds/dt$

at $t = 5s$

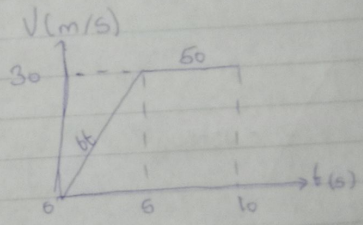
$V = 6t = 6 \times 5 = 30 m/s$

at $t = 10s$

$V = 6 \times 10$

$V = 60 m/s$

V-t graph



ii) $a = dv/dt$

at $t = 5s$

$a = 6 m/s^2$

at $t = ws$

$a = 0 m/s$

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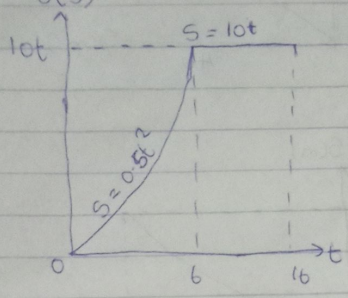
1) 3(s)



= $v = ds/dt$

$v = 1.5t^2$

at $t = 6s$

$v = 1.5 \times 6^2$

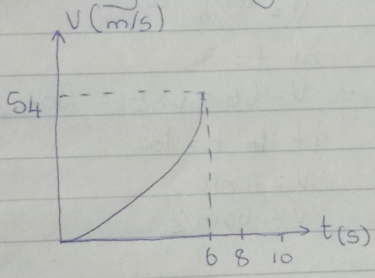
$= 1.5 \times 36$

$v = 54 m/s$

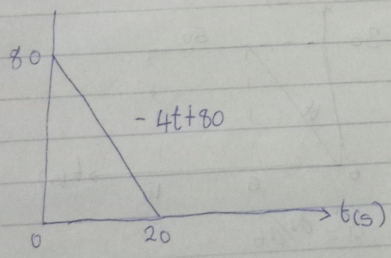
$t = 6s - 10s$, $S = 108$

$v = 0$

Velocity-time graph



2) V(m/s)



(i) $S = \int v dt$

$S = \int (-4t + 80)$

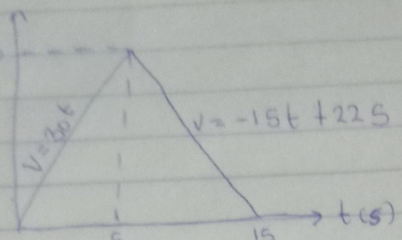
$S = -2t^2 + 80t$

at $t = 20s$

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

$S = 1600 - 800 = 800m$

6)



$0 \le t \le 5$

$V = 30t$

$\int_0^S ds = \int_0^5 30t$

$S = 15t^2 \Big|_0^5$

$S = 15(5)^2 - 15(0)^2$

$S = 15 \times 25 = 375\,m$

$S = t45s$

$V = -15t + 225$

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

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

$S - 375 = \left[\frac{-15(15)^2}{2} + 225(15)\right] - \left[\frac{15(5)^2}{2} + 225(5)\right]$

$S - 375 = \left[\frac{-15 \times 225}{2} + 3375\right] - \left[\frac{-15 \times 25}{2} + 1125\right]$

$S - 375 = (-1687.5 + 3375) - (-187.5 + 1125)$

$S - 375 = 1687.5 - 937.5$

$S - 375 = 750$

$S = 1125\,m$

S-t graph