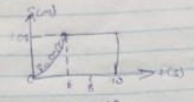
Aga kasdadi
18/11/2021

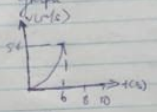
Complete

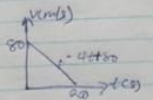
1) 

$V = \frac{ds}{dt}$
$V = 1.5t$
at $t = 6s$

$V = 1.5 \times 6^2$
$V = 54 m/s$
from $t = 6s$ – $10s$, $a = 10s$
$\therefore V = 0$

v-t graph

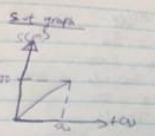


2) 

3) $S = \int v\,dt$
$S = \int (-4t + 80)$
$S = -2t^2 + 80t$
at $t = 20s$
$S = -2(20)^2 + 80(20)$
$S = 1600 - 800 = 80m$

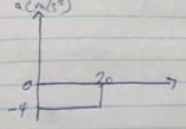
Complete

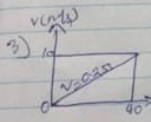
s-t graph



ii acceleration
$a = dv/dt$
$\therefore a = -4 m/s$
at $t = 20s$, $a = -4 m/s^2$

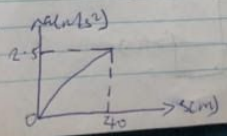
a-t graph



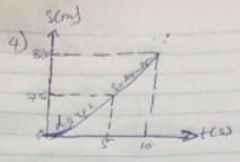
3) 

$a = (dv/ds)v$
$V = 0.25s$
$a = 10 \times d(0.25s)/ds$
$a = 10 \times 0.25$
$a = 2.5 m/s$

a-s graph



4) s(m)



$V = ds/dt$

at $t = 5s$

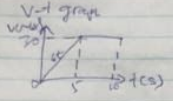
$V = 6t = 6 \times 5$

$= 30 m/s$

at $t = 10$

$V = 30 m/s$

V-t graph



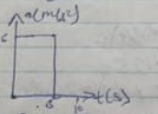
ii) $a = dv/dt$

at $t = 5s$

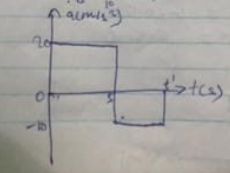
$a = 6 m/s^2$

at $t = 10 m/s$

$a = 0 m/s^2$



5)



6) $V = \int a\,dt$

$V = \int 20\,dt$

$V = 20t$

at $t = 5s$

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

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

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

$V - 100 = -10t + 50$

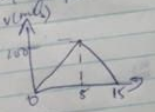
at t, $V = 0$

$0 - 100 = -10t + 50$

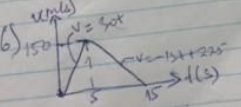
$-10t = 150$

$t = 15s$

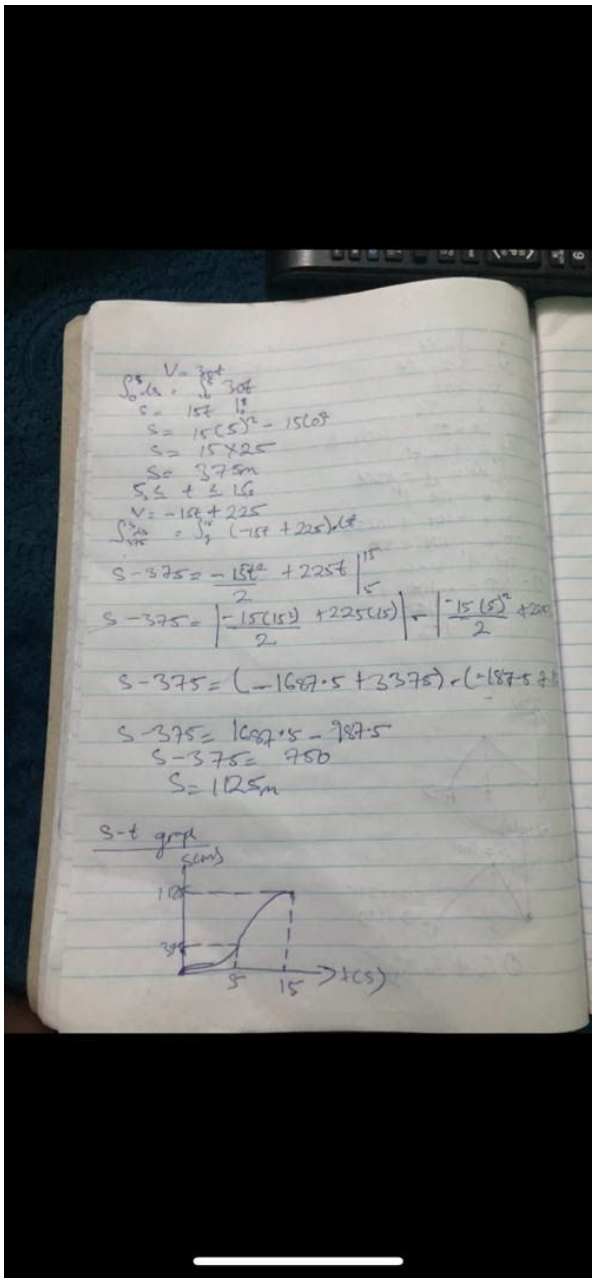
V-t graph



6)



$0 \leq t \leq 5$



$V = 3t^2$

$\int_0^5 ds = \int_0^5 3t^2$

$s = 15t - \frac{15}{2}t^2$

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

$s = 15 \times 25$

$s = 375m$

$s, t \geq 15$

$V = -15t + 225$

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

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

$s - 375 = \left| \frac{-15(15)^2}{2} + 225(15) \right| - \left| \frac{-15(5)^2}{2} + 225 \right|$

$s - 375 = (-1687.5 + 3375) - (-187.5 + 1$

$s - 375 = 1687.5 - 187.5$

$s - 375 = 750$

$s = 1125m$

s-t graph