

$$0 \leq t \leq 5$$

$$v = 30t$$

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

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

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

$$s = 15 \times 25$$

$$s = 375_m$$

$$5 \leq t \leq 15$$

$$v = -15t + 225$$

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

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

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

$$s - 375 = \left[\frac{-5 \times 225 + 3375}{2} \right] - \left[\frac{-15 \times 25 + 1125}{2} \right]$$

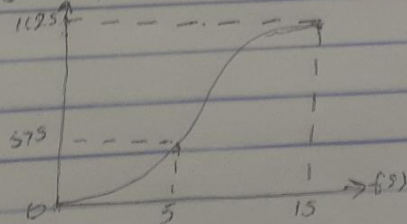
$$s - 375 = (-1687.5 + 3375) - (-187.5 + 1125)$$

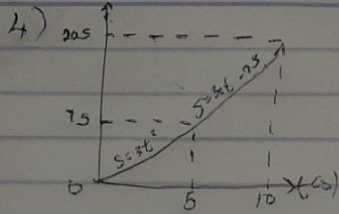
$$s - 375 = +1687.5 - 937.5$$

$$s - 375 = 750$$

$$s = 1125_m$$

graph s-t (m)



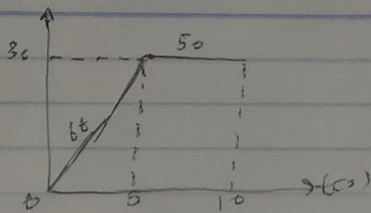


(1) $v = ds/dt$
 at $t = 5s$
 $v = 6t = 6 \times 5$
 $= 30 \text{ m/s}$

$t = 10s$

$v = 30 \text{ m/s}$

Graph $v-t$



(2) $a = dv/dt$

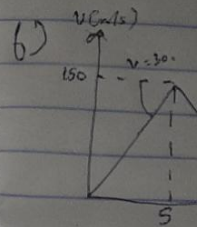
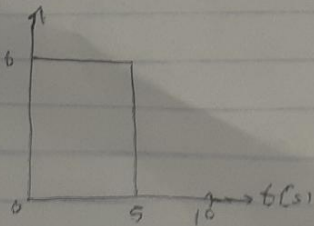
$t = 5s$

$a = 6 \text{ m/s}^2$

$t = 10s$

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

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



$0 \leq t \leq 5$

$v = 30t$

$\int_0^5 ds = \int_0^5 v dt$

$s = 15t^2$

$s = 15(5)$

$s = 15 \times 5$

$s = 375 \text{ m}$

$5 \leq t \leq 10$

$v = -15t$

$\int_{375}^{1125} ds = \int_5^{10} v dt$

$s = 375 =$

$s = 375 =$

$s = 375 =$

$s = 375 =$

$s = 375 =$

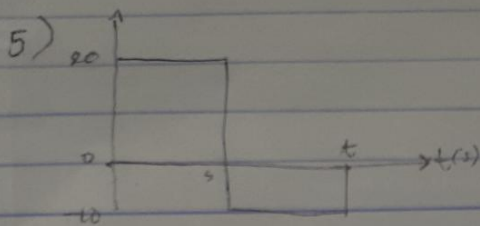
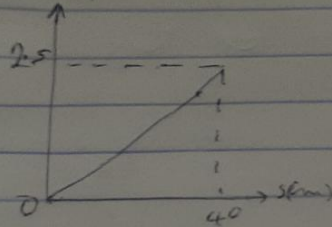
$s = 375 =$

$s = 1125$

Graph $s-t$

575

6 graph of $a-s$



$$V = \int a dt$$

$$V = \int 20 dt$$

$$V = 20t$$

$$t = 5$$

$$V = 20 \times 5 = 100 \text{ m/s}$$

$$5 \text{ s} < t \leq t'$$

$$\int_{100}^V dv = \int_5^{t'} -10 dt$$

$$V - 100 = -10t \Big|_5^{t'}$$

$$V - 100 = -10t' + 10(5)$$

$$V - 100 = -10t' + 50$$

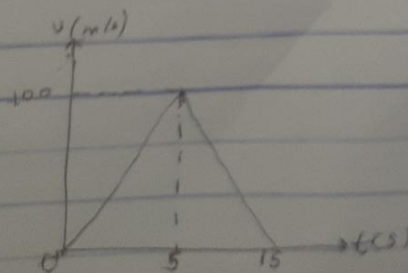
$$t', V = 0$$

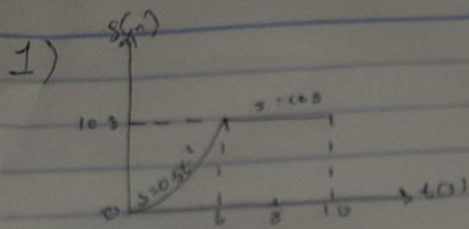
$$0 - 100 = -10t' + 50$$

$$10t' = 150$$

$$t' = 15 \text{ s}$$

Graph of $v-t$





$$V = ds/dt$$

$$V = 1.5t^2$$

$$t = 6s$$

$$V = 1.5 \times 6^2$$

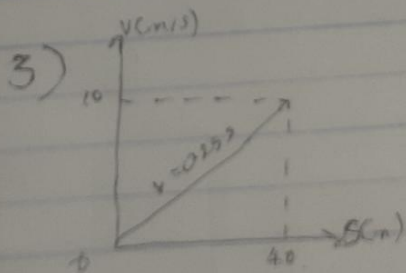
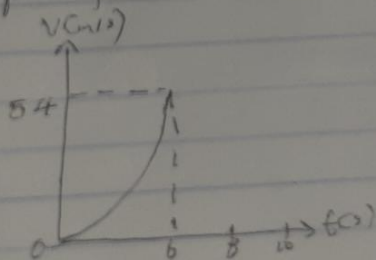
$$= 1.5 \times 36$$

$$V = 54 \text{ m/s}$$

For $t = 6s$ to $10s$, $s = 108$

$$\therefore V = 0$$

Graph of $V-t$



$$a = (dv/ds) v$$

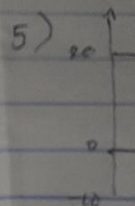
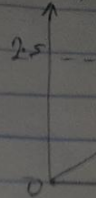
$$v = 0.25s$$

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

$$a = 10 \times 0.25$$

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

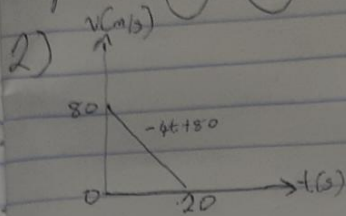
6) Graph of



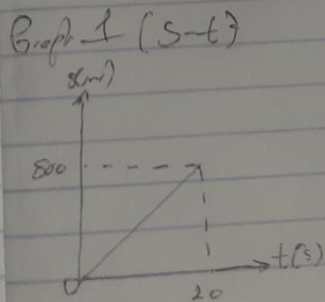
$V =$
 $V =$
 $V =$
 \neq
 $V =$
 $5s$
 $\int_{10}^V dv$
 $v - 10$
 $v - 10$
 $v - 10$
 t
 $0 -$
 10
 t

Graph

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(i) $s = \int v dt$
 $s = \int (-4t + 80)$
 $s = -2t^2 + 80t$
when $t = 20$ s
 $s = 2(20)^2 + 80(20)$
 $s = 1600 - 800$
 $= 800$ m



ii. acceleration
 $a = dv/dt$
 $a = -4 \text{ m/s}^2$
 $t = 20$ s
 $a = -4 \text{ m/s}^2$

