

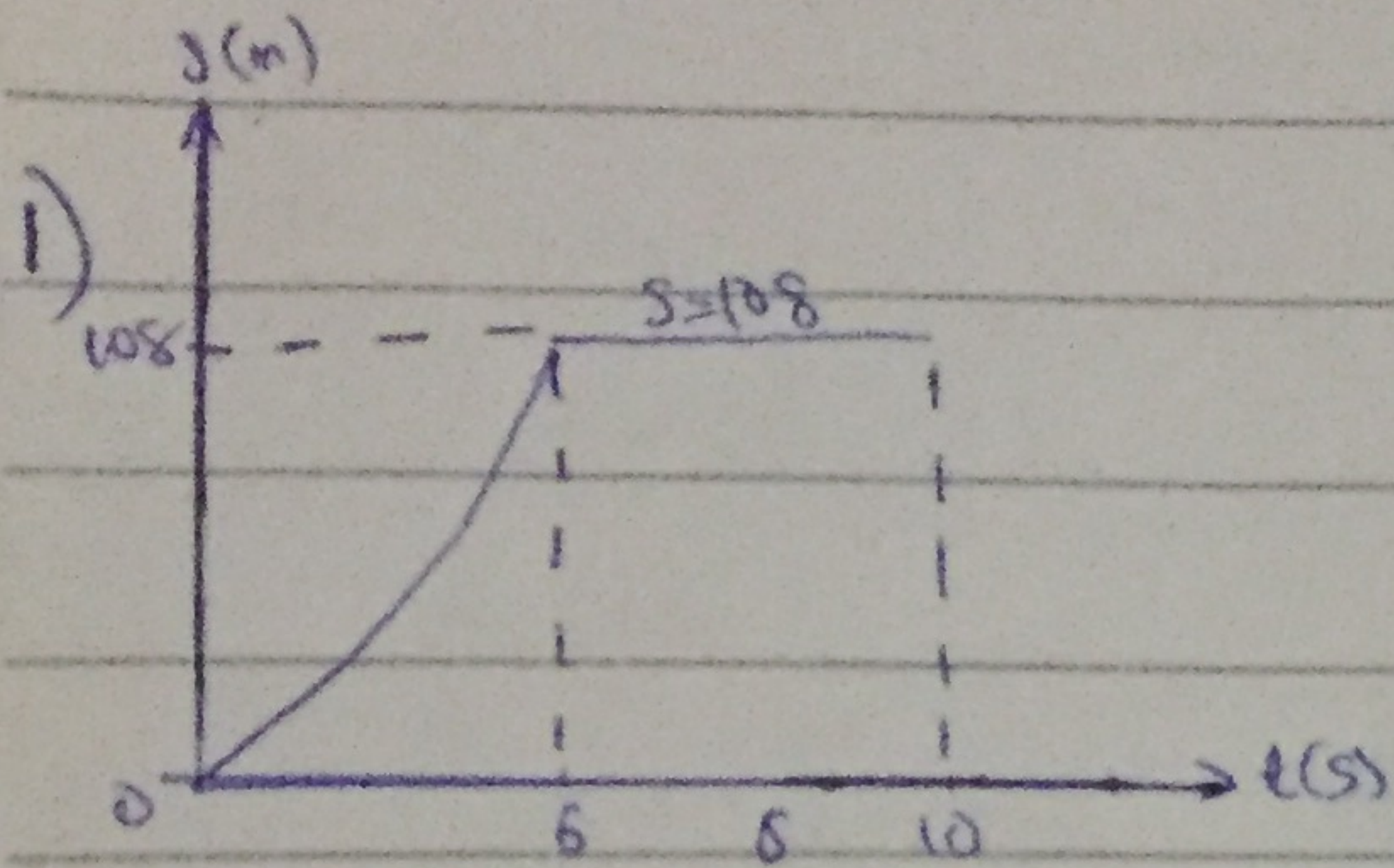
Ubari-Wokoma Blossom Chingor

18/ENG04/071

Date.

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Elect/Elect



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

$$= 1.5t$$

$$\text{at } t = 6s$$

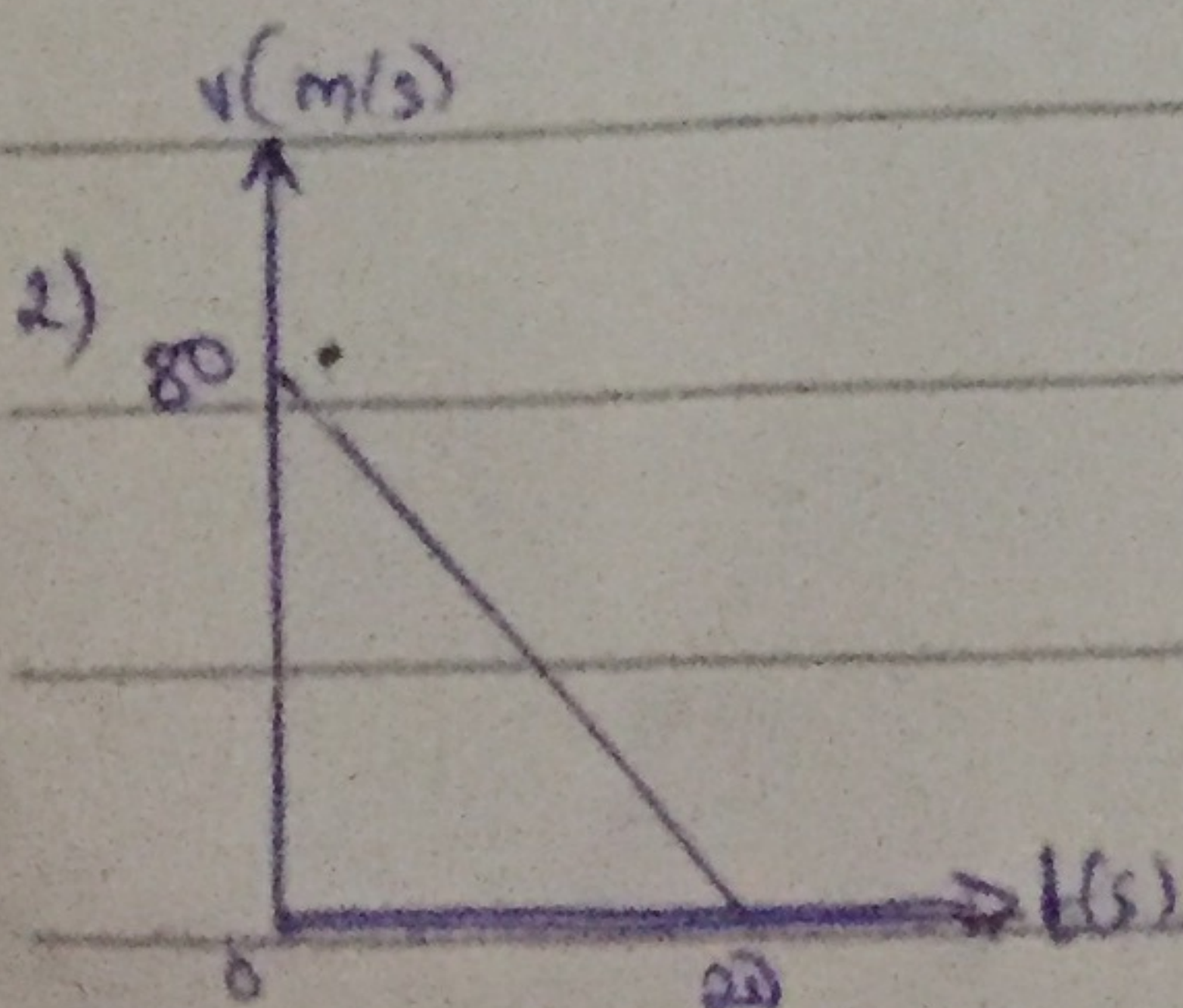
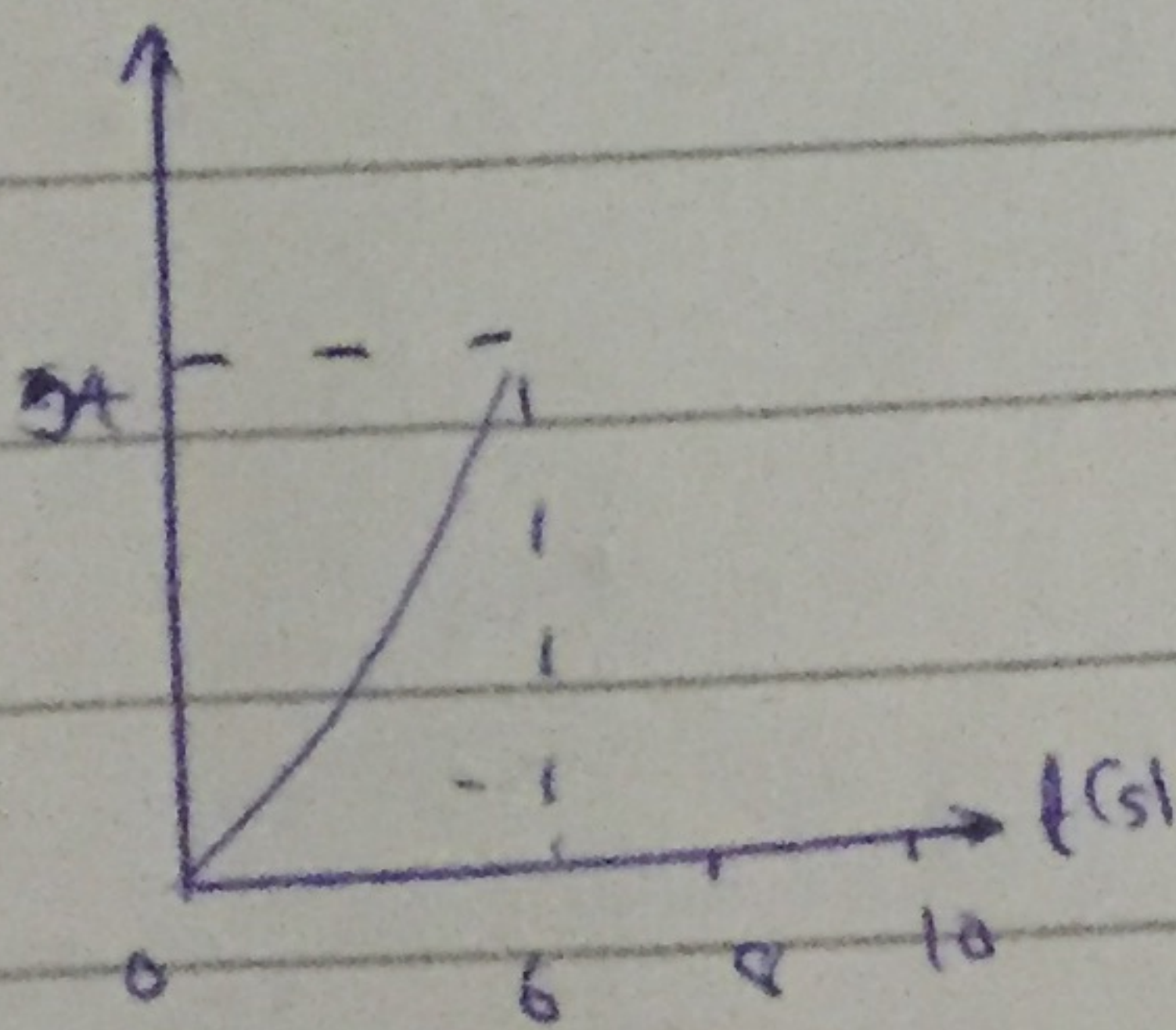
$$v = 1.5 \times 6^2$$

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

$$\text{From } t = 6s - 10s, s = 108$$

$$\therefore v = 0$$

v-t graph
v(m/s)



i)

$$S = \int v dt$$

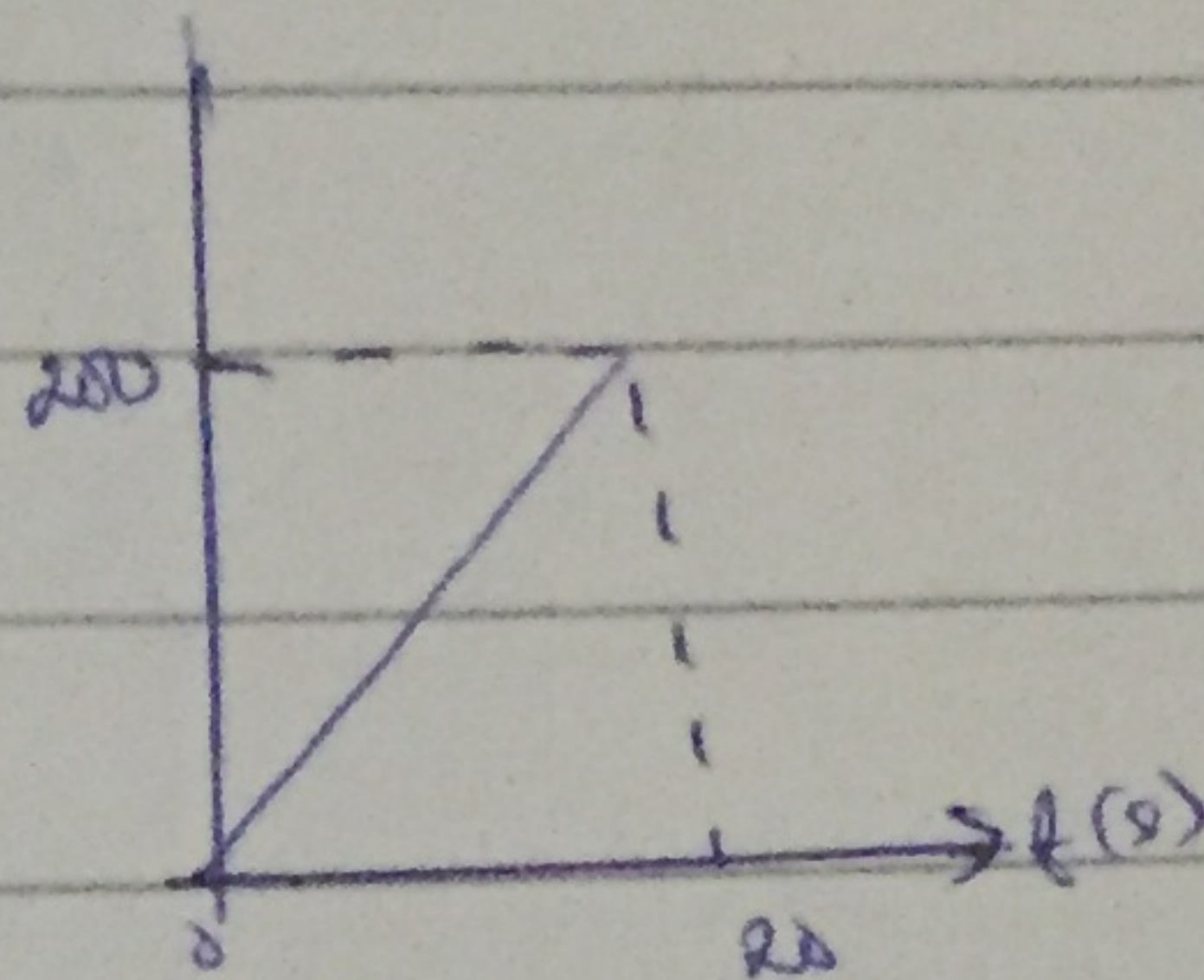
$$= \int (-2t + 80)$$

$$= -2t^2 + 80t \text{ at } t = 20s$$

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

$$S = 800 \text{ m}$$

s-t part

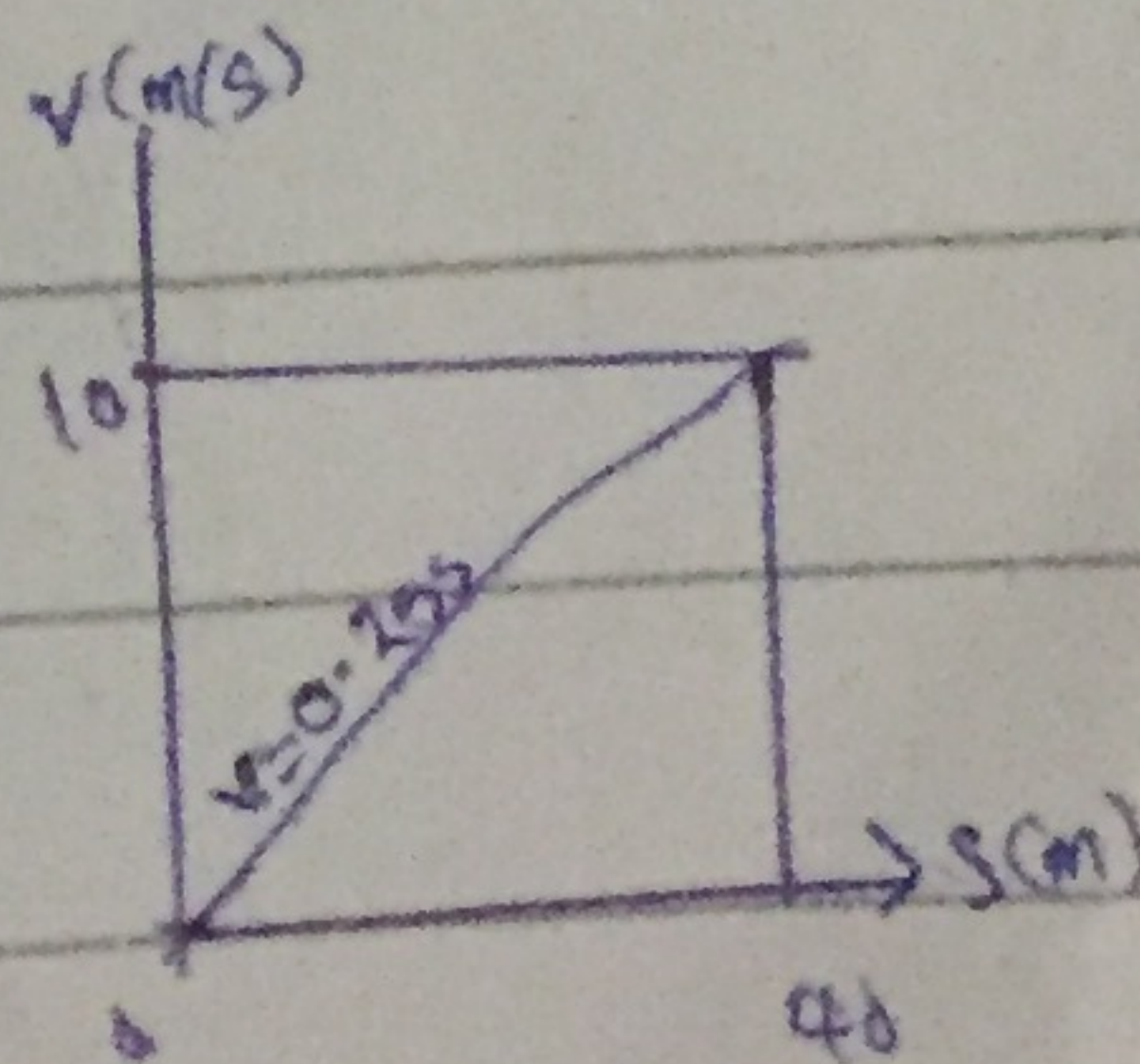
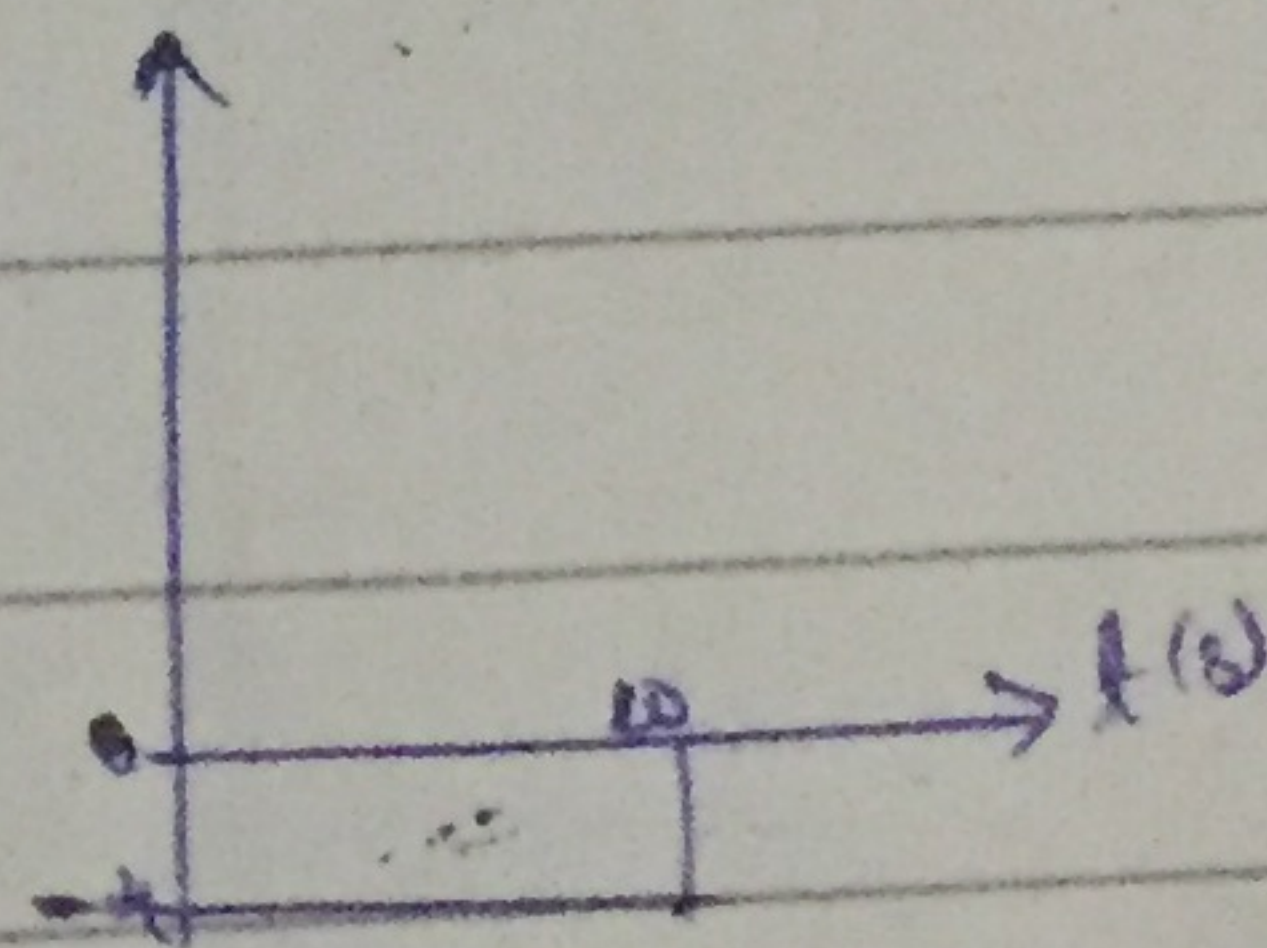


ii) acceleration

$$a = \frac{dv}{dt} = -4 \text{ m/s}^2$$

$$\text{at } t = 20, a = 4 \text{ m/s}^2$$

a-t graph



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

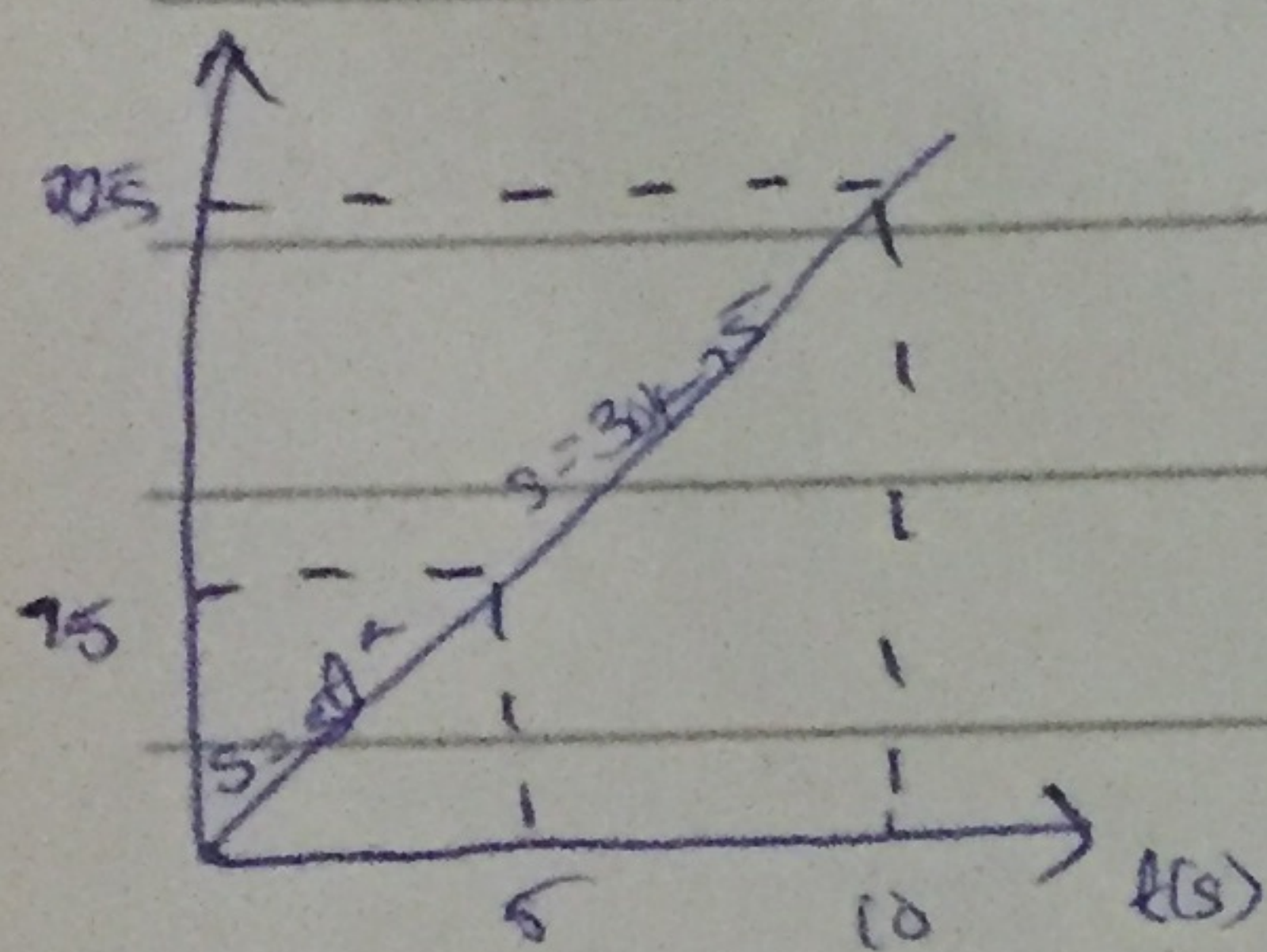
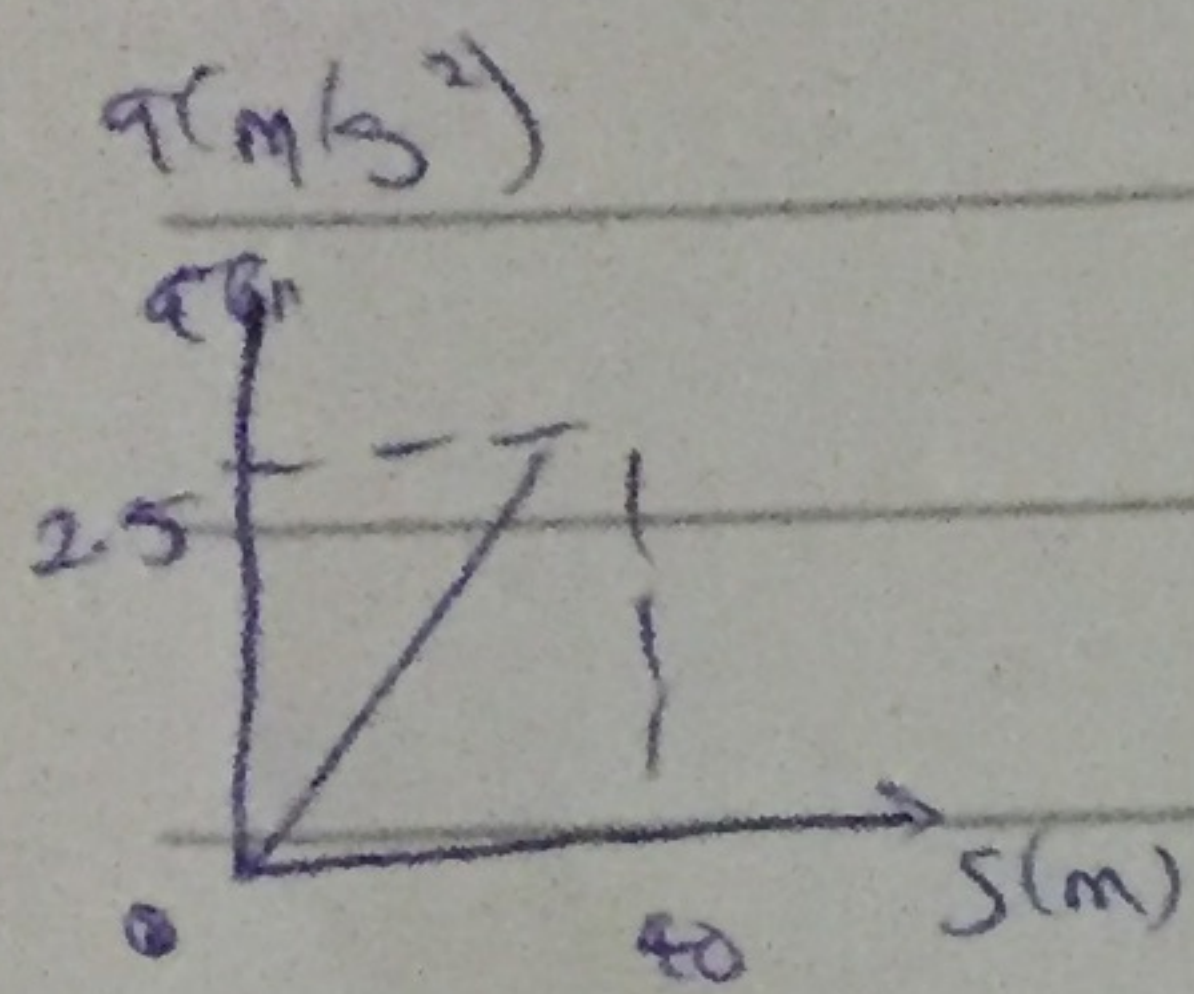
$$v = 0.25s$$

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

$$a = 10 \times 0.25$$

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

a-s graph



$$i) v = \frac{ds}{dt}$$

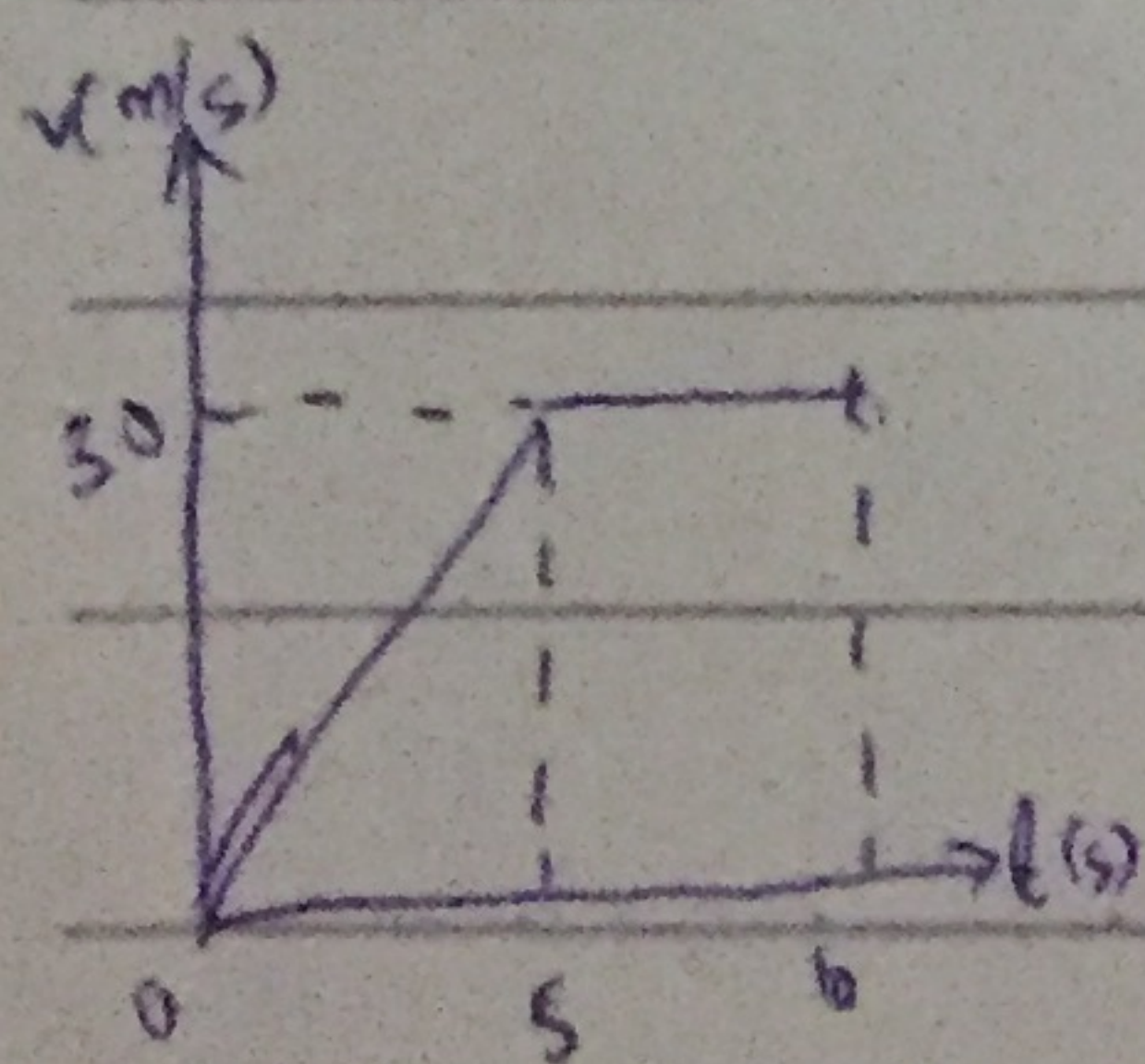
$$\text{at } t = 5$$

$$v = 6t = 6 \times 5 = 30 \text{ m/s}$$

$$\text{at } t = 10$$

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

v-t graph



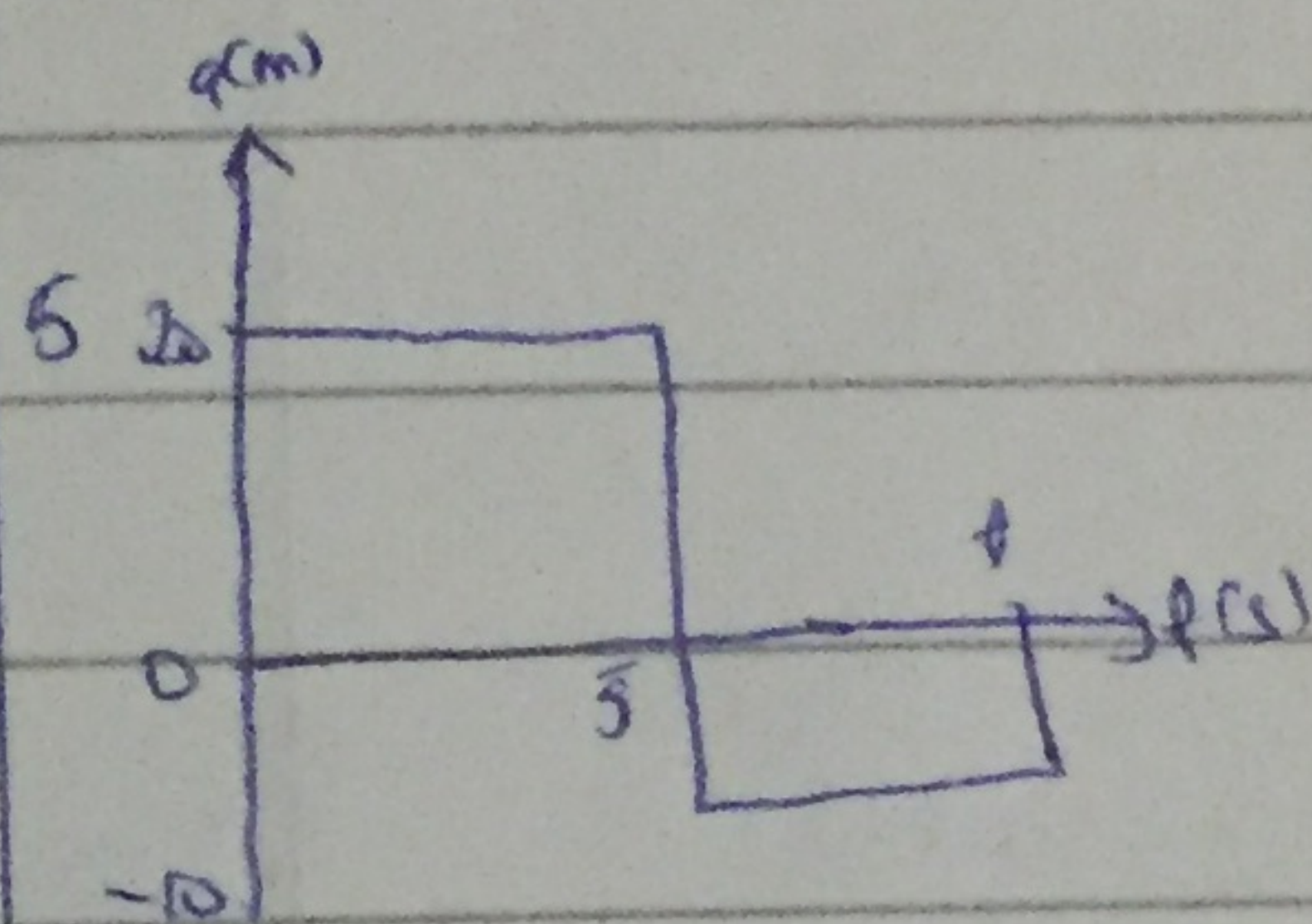
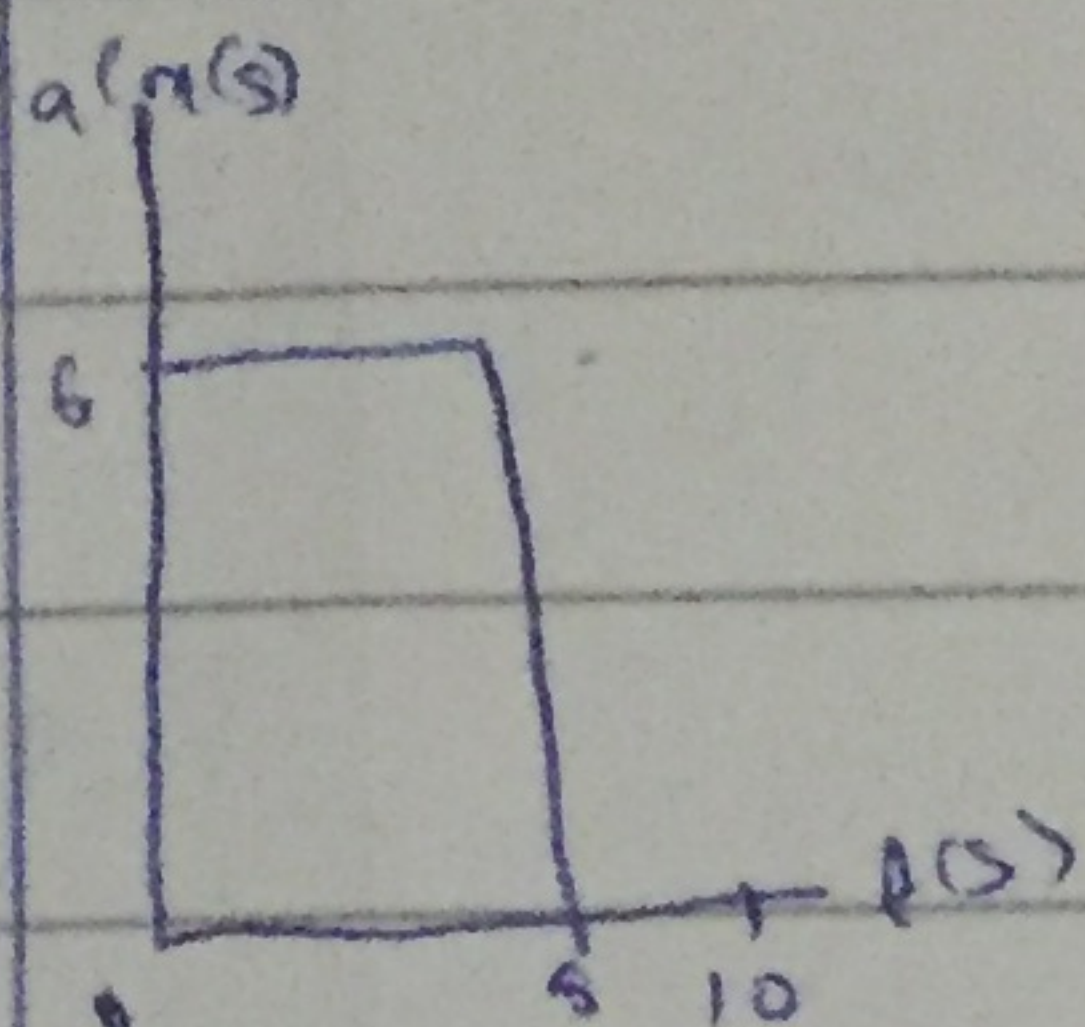
$$ii) \frac{dv}{dt}$$

$$\text{at } t = 5$$

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

$$\text{at } t = 10$$

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



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

$$= \int 2t dt$$

$$= 2t^2 \text{ at } t = 5$$

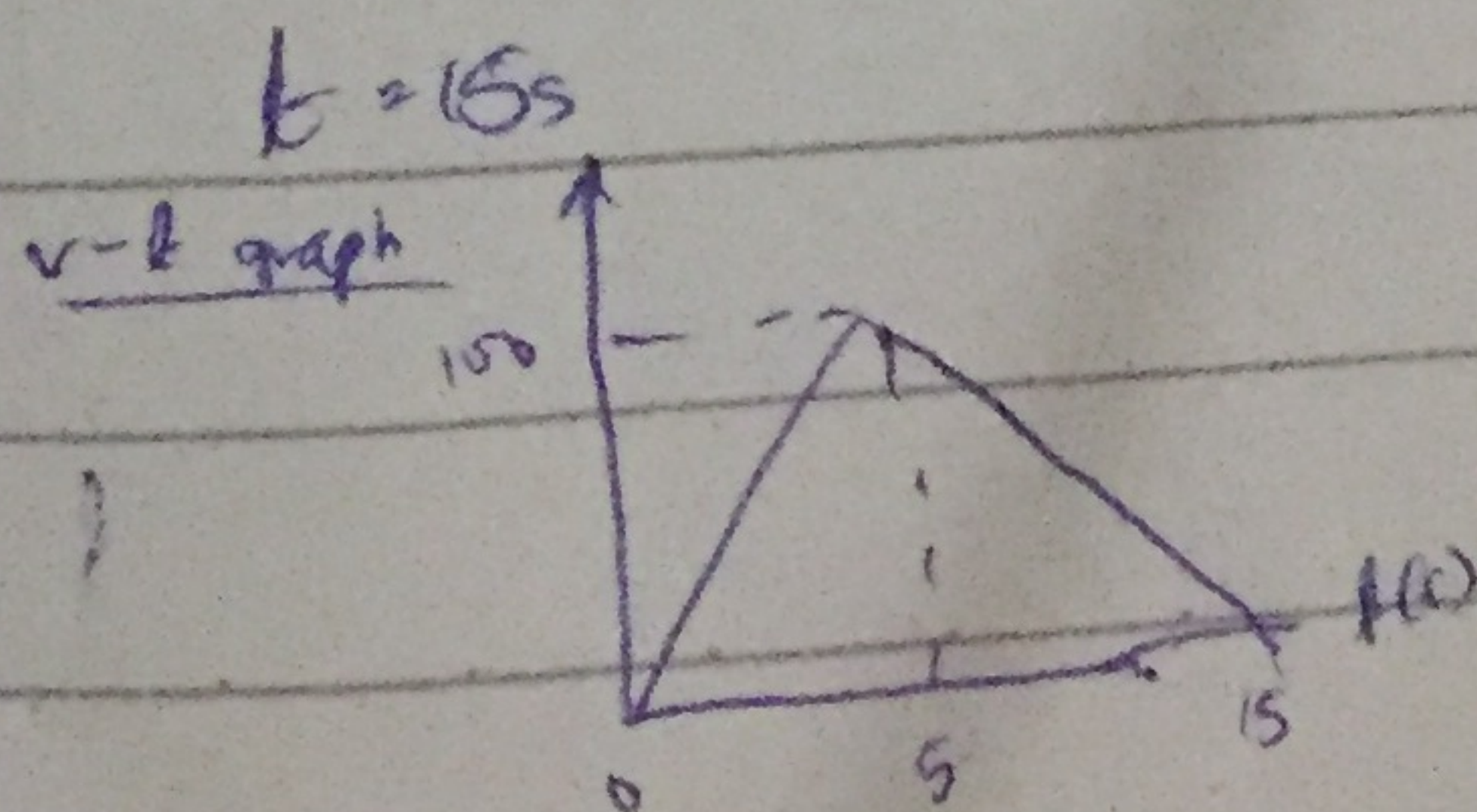
$$v = 2 \times 5^2 = 100 \text{ m/s}$$

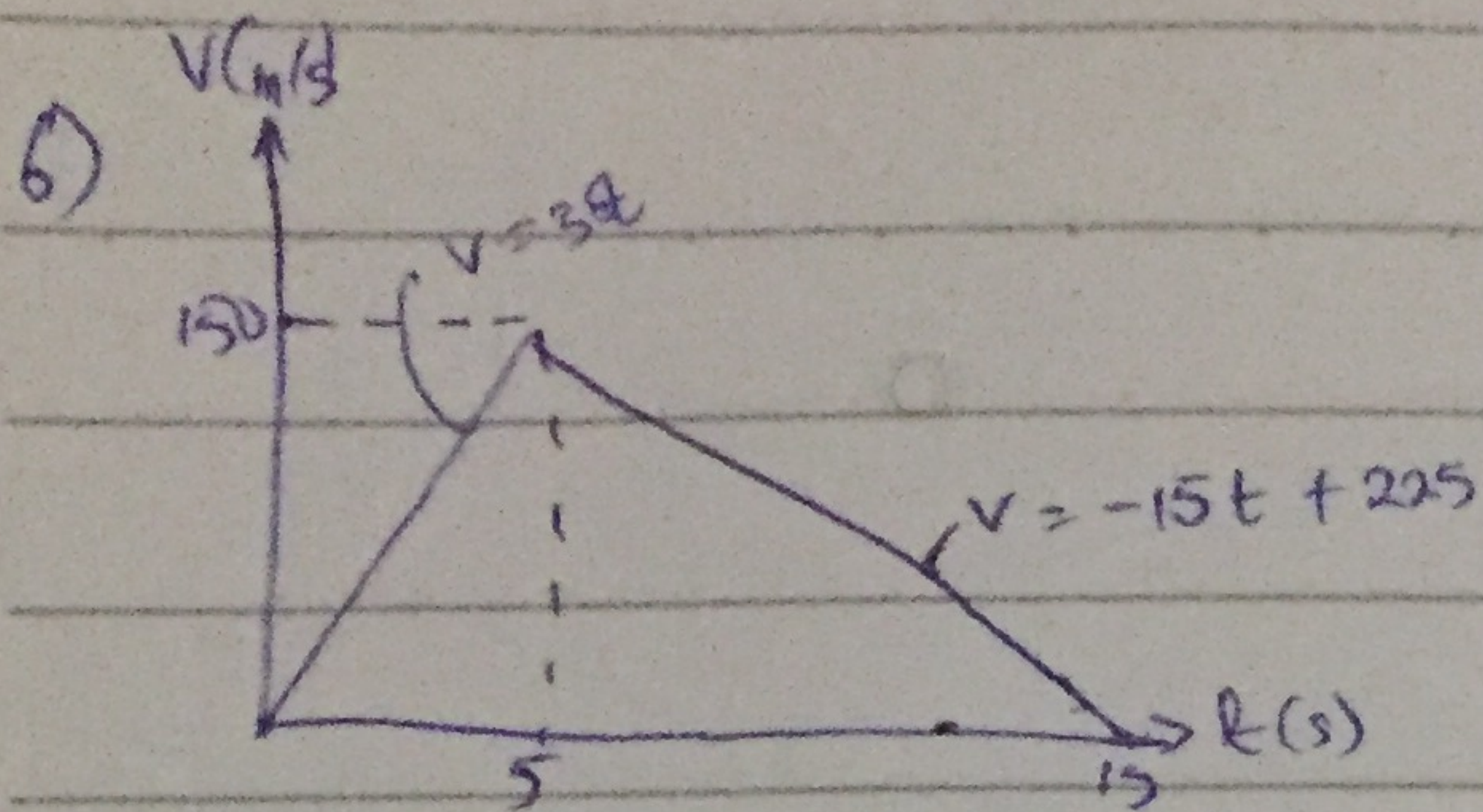
$$5 \leq t \leq 10$$

$$\int_{5}^{10} dv = \int_{5}^{10} -10 dt$$

$$v - 100 = -10t \Big|_5^{10}$$

$$v - 100 = -10t + 150$$





$$0 \leq t \leq 5$$

$$v = 30t$$

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

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

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

$$s = 15 \times 25$$

$$s = 375 \text{ m}$$

$$5 \leq t \leq 15$$

$$v = -15t + 225$$

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

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

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

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

$$s - 375 = 1687.5 - 937.5$$

$$s = 1125 \text{ m}$$

