

I. 16th

$$V_f = 0 \text{ m/s}$$

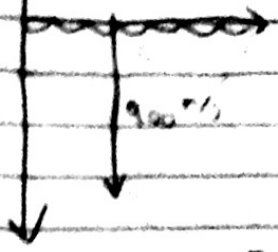
$$V_i = 90 \text{ m/s}$$

$$t = 0.45$$

$$V = V_0 + at$$

$$x - x_0 = V_0 t + \frac{1}{2} at^2$$

$$V^2 = V_0^2 + 2a(x - x_0)$$



$$V = V_0 + at$$

$$V - V_0 = at$$

$$a = \frac{V - V_0}{t}$$

$$a = \frac{0 - (900 \text{ m/s})}{0.45}$$

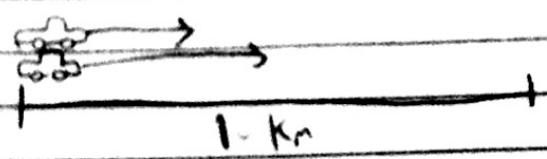
$$a = 2,250 \text{ m/s}^2$$

$$x = 180 \text{ meters}$$

$$x - x_0 = V_0 t + \frac{1}{2} at^2$$

$$x = -360 + 180$$

2



$$V_{i2} = 0$$

$$V_{i1} = 87 \text{ m/s}$$

$$x = 1 \text{ km}$$

$$t_0 = 12 \text{ sec}$$

UNKNOWN

- a_1
- V_{f1}
- a_2
- t_2

a. need a_1, V_{f1}

$$x - x_0 = V_0 t + \frac{1}{2} at^2$$

$$2(x - V_0 t) = at^2$$

$$a = \frac{2(x - V_0 t)}{t^2}$$

$$a = \frac{2x}{t^2} \quad a = \frac{1000 \text{ m}}{149 \text{ sec}^2}$$

$$a_1 = 6.944 \text{ m/s}^2$$

b. need a_2, t_2

$$V_f^2 = V_0^2 + 2a(x - x_0)$$

$$\frac{V_f^2}{2x} = a$$

$$a_2 = 3.785 \text{ m/s}^2$$

$$V_f = V_0 + at$$

$$V_f = 83.33 \text{ m/s}$$

$$V_f = at$$

$$V_f = (6.944 \text{ m/s}^2)(12 \text{ s})$$

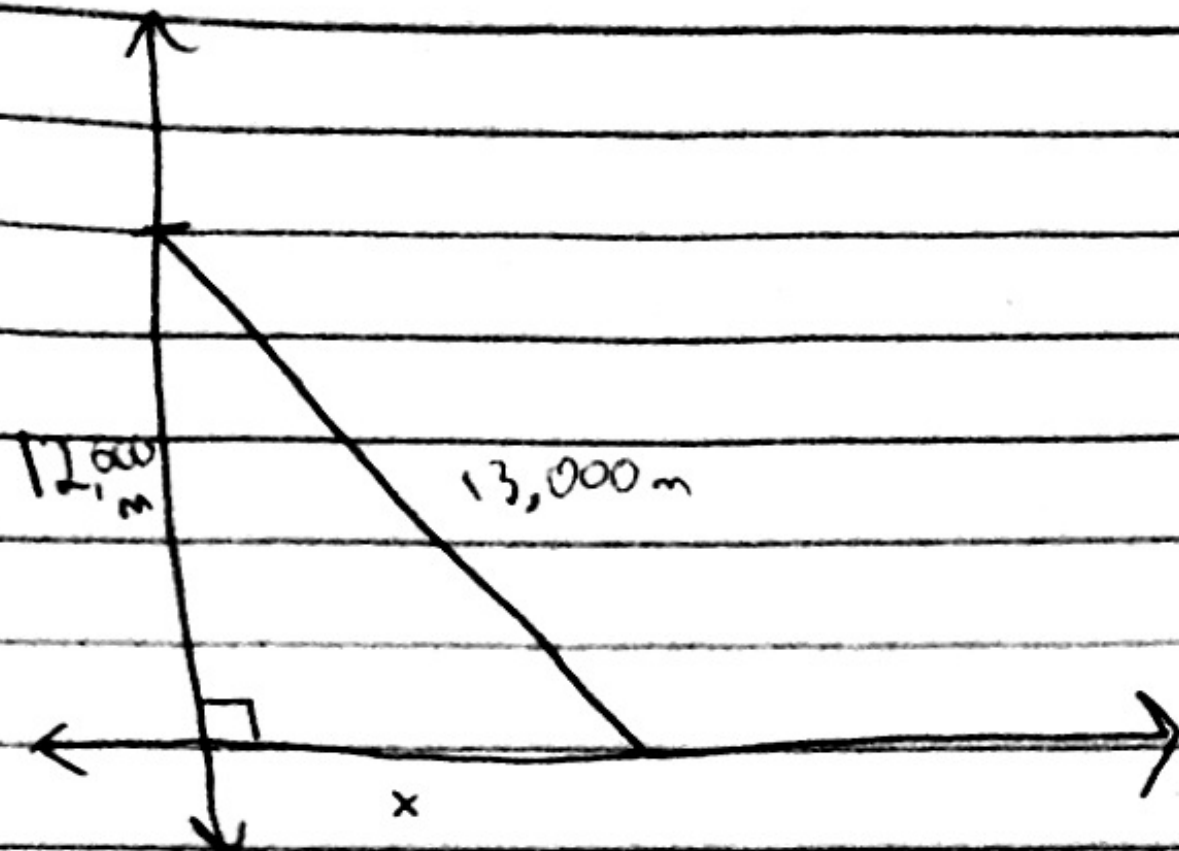
$$V_f = V_0 + at$$

$$V_f - V_0 = at$$

$$t = \frac{V_f - V_0}{a}$$

$$t = 22.99 \text{ s}$$

3.



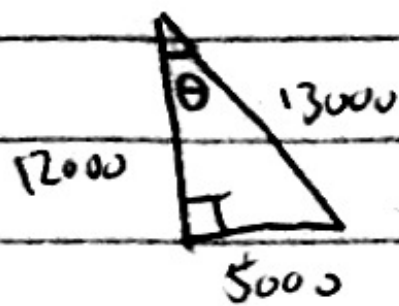
$$12,000^2 + x^2 = 13,000^2$$

$$x^2 = 13,000^2 - 12,000^2$$

$$x = \sqrt{13,000^2 - 12,000^2}$$

$$x = \sqrt{25,000,000}$$

$$x = 5000 \text{ m}$$



$$\sin(\theta) = \frac{5000}{13000}$$

$$\sin(\theta) = 5/13$$

$$\sin^{-1}(5/13) = \theta$$

22.62° South to east