

$$\sum \vec{F}_x = T_x = ma$$

$$T \sin \theta = ma$$

$$\sum \vec{F}_y = T_y - F_g = 0$$

$$T_y = F_g$$

$$T \cos \theta = mg$$

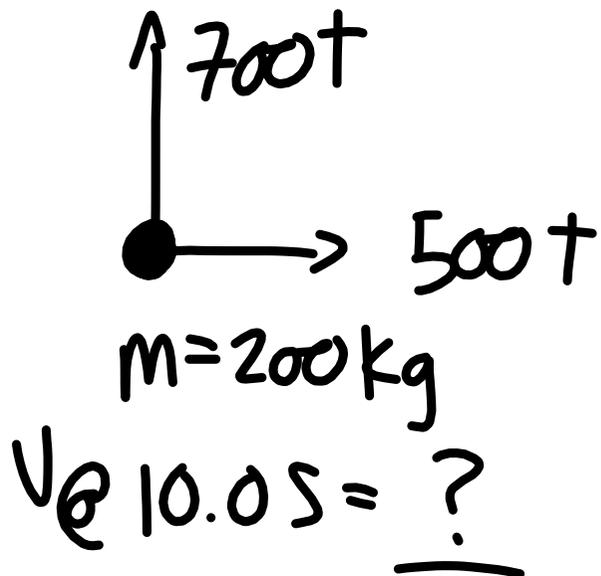
$$T \sin \theta = ma \quad T \cos \theta = mg$$

$$T = \frac{ma}{\sin \theta}$$

$$T = \frac{mg}{\cos \theta}$$

$$\frac{\cancel{ma}}{\sin \theta} = \frac{\cancel{mg}}{\cos \theta}$$

$$\frac{a}{\sin \theta} = \frac{g}{\cos \theta}$$
$$a \cos \theta = g \sin \theta \rightarrow a = g \frac{\sin \theta}{\cos \theta}$$
$$a = g \tan \theta$$



$$\frac{F_x}{1}$$

$$F = ma$$

$$\frac{500t}{200} = \frac{200}{200} a$$

$$\frac{5}{2}t = a$$

$$a(t) = \frac{5}{2}t$$

$$v(t) = \frac{5t^2}{4}$$

$$\frac{F_y}{1}$$

$$F = ma$$

$$700t = 200 a$$

$$\frac{7}{2}t = a$$

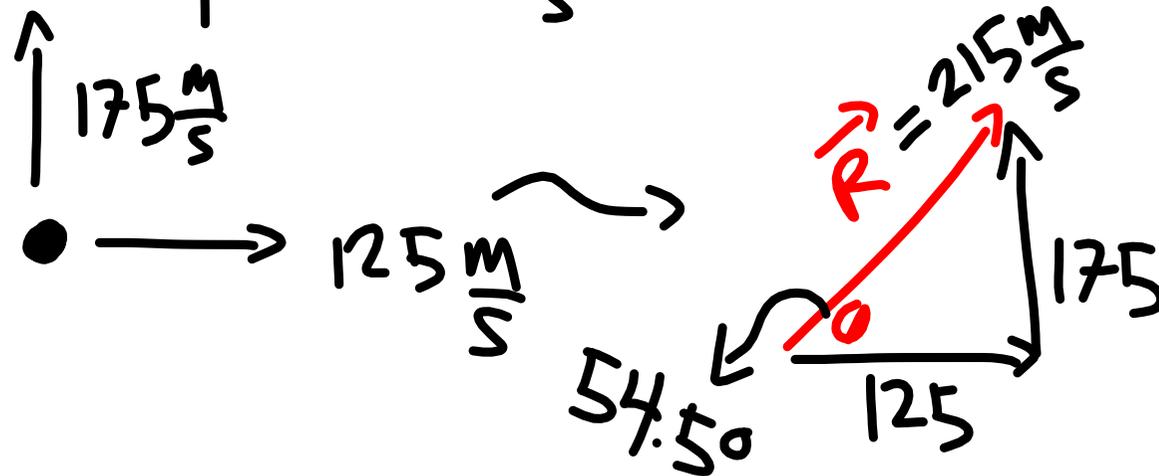
$$a(t) = \frac{7}{2}t$$

$$V_j(t) = \frac{7t^2}{4}$$

$$= \frac{700}{4} = 175 \frac{\text{m}}{\text{s}}$$

$$V_i(t) = \frac{5t^2}{4} = \frac{500}{4}$$

$$= 125 \frac{\text{m}}{\text{s}}$$



$$v(t) = (4t \hat{i} + 5t \hat{j}) \frac{m}{s}$$

$$a(t) = (4 \hat{i} + 5 \hat{j}) \frac{m}{s^2}$$

