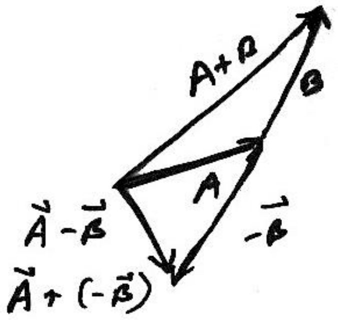
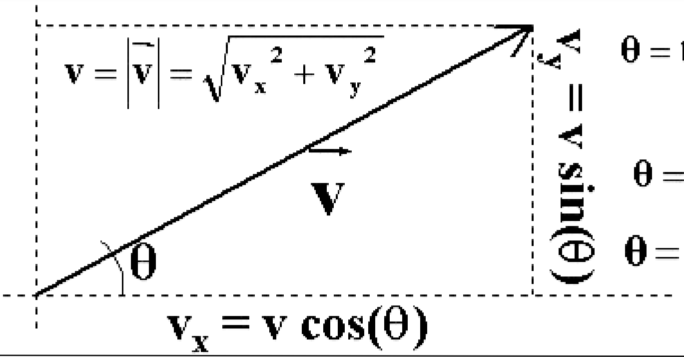




$$\theta = \tan^{-1}\left(\frac{v_y}{v_x}\right)$$

$$\theta = \cos^{-1}\left(\frac{v_x}{v}\right)$$

$$\theta = \sin^{-1}\left(\frac{v_y}{v}\right)$$

$$\bar{\vec{v}} = \frac{\Delta \vec{r}}{\Delta t} \qquad \bar{\vec{a}} = \frac{\Delta \vec{v}}{\Delta t}$$

1D

$$\Delta x = x_f - x_i$$

$$\Delta v = v_f - v_i$$

$$a = \Delta v / \Delta t$$

$$\Delta x = \bar{v}\,\Delta t$$

a = constant

$$\bar{v} = (v_f + v_i)/2$$

$$v = v_o + at$$

$$x = x_o + v_o t + \frac{1}{2} a t^2$$

$$v^2 - v_o^2 = 2a(x - x_o)$$

2D

$$x \rightarrow x,y \qquad x_o \rightarrow x_o, y_o$$

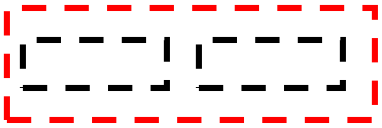
$$v \rightarrow v_x, v_y \qquad v_o \rightarrow v_{ox}, v_{oy}$$

$$a \rightarrow a_x, a_y$$

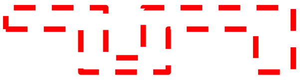
NL

$$\vec{F}_{tot} = m\,\vec{a}$$

Defining the system



Grouping masses
Identifying F – reaction F



Going around corners consistently