Position, Velocity and Acceleration

- Position, Velocity and Acceleration are Vectors!

x direction

y direction

$$\vec{v}_{av} = \frac{\vec{r}_f - \vec{r}_0}{t_f - t_0}$$

$$v_x = \frac{x_f - x_0}{t_f - t_0}$$

$$v_y = \frac{y_f - y_0}{t_f - t_0}$$

$$|\vec{v}| = \sqrt{v_x^2 + v_y^2}$$

$$\vec{a}_{av} = \frac{\vec{v}_f - \vec{v}_0}{t_f - t_0}$$

$$a_x = \frac{v_{xf} - v_{x0}}{t_f - t_0}$$

$$a_y = \frac{v_{yf} - v_{y0}}{t_f - t_0}$$

$$|\vec{a}| = \sqrt{a_x^2 + a_y^2}$$

- x and y directions are INDEPENDENT!