KINEMATICS 1D/2D

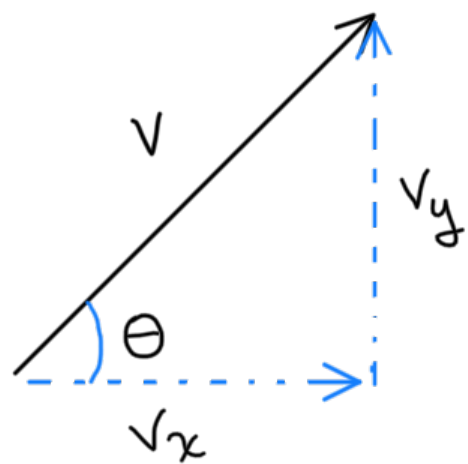$$V_f = V_0 + at \quad | \quad x = x_0 + V_0 t + \tfrac{1}{2}at^2 \quad | \quad x = V_f t - \tfrac{1}{2}at^2$$

$$x = \tfrac{1}{2}(V_f + V_0)t \quad | \quad V_f^2 = V_0^2 + 2ax$$

Average

$$V_{avg} = \frac{\Delta x}{\Delta t}$$

$$a_{avg} = \frac{\Delta V}{\Delta t}$$

Vectors

$$V_y = V \sin\theta$$

$$V_x = V \cos\theta$$

$$\theta = \tan^{-1}\left(\frac{V_y}{V_x}\right)$$

Circular Motion

$$a_c = \frac{V^2}{r} \qquad V = r\omega$$

$$a_c = r\omega^2$$