

# Formulas and Constants

$$g = 9.80 \text{ m/s}^2$$

$$\mathbf{A} + \mathbf{B} = \mathbf{C} \quad \Rightarrow \quad A_x + B_x = C_x \quad , \quad A_y + B_y = C_y$$

$$C_x = C \cos(\theta) \quad , \quad C_y = C \sin(\theta) \quad , \quad C = \sqrt{C_x^2 + C_y^2} \quad , \quad \theta = \arctan\left(\frac{C_y}{C_x}\right)$$

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

$$v = v_0 + at \quad , \quad \Delta x = v_0 t + \frac{1}{2}at^2 \quad , \quad v^2 = v_0^2 + 2a\Delta x$$

$$T = \frac{v_{0y}}{g} \quad , \quad H = \frac{v_{0y}^2}{2g} \quad , \quad R = \frac{v_0^2 \sin(2\theta)}{g}$$