Kinematics Formula Sheet:

Displacement:

$$\boldsymbol{d} = \Delta x = x_f - x_0$$

Position Functions: x(t) and y(t)
Velocity Function: v(t)
Acceleration Function: a(t)

Average Velocity:

$$\bar{\boldsymbol{v}} = \frac{displacement}{time} = \frac{\Delta x}{\Delta t} = \frac{x_2 - x_1}{t_2 - t_1}$$

Average Speed:

$$\bar{\boldsymbol{s}} = \frac{total\ distance}{elapsed\ time}$$

Instantaneous Velocity:

$$\boldsymbol{v(t)} = \frac{d}{dt}\,[x(t)]$$

Instantaneous Speed:

$$\boldsymbol{s(t)} = |v(t)|$$

Average Acceleration:

$$\bar{\boldsymbol{a}} = \frac{\Delta v}{\Delta t} = \frac{v_f - v_0}{t_f - t_0}$$

Instantaneous Acceleration:

$$\boldsymbol{a(t)} = \frac{d}{dt}\,[v(t)]$$

Constant Speed:

$$\boldsymbol{d} = vt$$

$$\boldsymbol{x_f} = x_0 + vt$$

Displacement: $d = \Delta x$
Final Position: x_f
Initial Position: x_0
Final Velocity: v_f
Initial Velocity: v_0
Time: t

Gravitational Acceleration:

$$\boldsymbol{g} = -9.8\ m/s^2$$

Constant Acceleration:

$$\bar{\boldsymbol{v}} = \frac{v_f + v_0}{2}$$

$$\boldsymbol{v_f} = v_0 + at$$

$$\boldsymbol{v_f^2} = v_0^2 + 2ad$$

$$\boldsymbol{d} = \frac{1}{2}[v_0 + v_f]t$$

$$\boldsymbol{x_f} = x_0 + v_{Xo}t + \frac{1}{2}at^2$$

$$\boldsymbol{y_f} = y_0 + v_{Yo}t + \frac{1}{2}at^2$$