

1 Formulas for 1st Midterm (FINAL VERSION)

One dimensional motion in x:

$$x = x_0 + v_0 t + \frac{1}{2} a t^2 \quad (1)$$

$$v = v_0 + a t \quad (2)$$

$$v^2 = v_0^2 + 2a(x - x_0) \quad (3)$$

Projectile Motion:

x	y
$x = x_0 + v_{0x} t$	$y = y_0 + v_{0y} t - \frac{1}{2} g t^2$
$v_x = v_{0x}$	$v_y = v_{0y} - g t$
$v_x^2 = v_{0x}^2$	$v_y^2 = v_{0y}^2 - 2g(y - y_0)$

Forces:

$$\Sigma \vec{F} = m \vec{a} \quad (4)$$

$$F_s \leq \mu_s N \quad (5)$$

$$F_k = \mu_k N \quad (6)$$

Newtonian Gravity:

$$F = \frac{GmM}{R^2} \quad (7)$$

$$G = 6.67 \times 10^{-11} \frac{N \times m^2}{kg^2} \quad (8)$$