

Sections in OpenStax that may be covered in the MidTerm:

- (a) **All of Chapter 2**
- (b) **3.1 to 3.4** (3.5 will not be on the MidTerm)
- (c) **4.1 to 4.7** (4.8 will not be on the MidTerm)
- (d) **5.1** (5.2 to 5.3 will not be on the MidTerm)
- (e) **6.1 to 6.3** (6.4 to 6.6 will not be on the MidTerm)
- (f) **All of Chapter 9**
- (g) **10.1 to 10.3** (10.4 to 10.7 will not be on the MidTerm)

Equations you can use for the MidTerm

It is ok to write/print-out your own equation sheet or use this

(a) $a_x = \text{constant}$

(b) $v_x = v_{x0} + a_x t$

(c) $x = x_0 + v_{x0} t + \frac{1}{2} a_x t^2$

(d) $x = x_0 + \frac{v_x^2 - v_{x0}^2}{2a_x}$

(e) For motion under gravity: $a_y = -g$

(e) $g = 9.8 \text{ m/sec}^2$

(a) $\vec{F} = m\vec{a}$

(b) $W = mg$
 $N = \text{normal force}$, $T = \text{tension}$

(c) $f_k = \mu_k N = \text{kinetic friction}$
 $f_s \leq \mu_s N = \text{static friction}$

$$(d) \quad s = r\theta$$

$$(e) \quad v_t = \omega r$$

$$(f) \quad a_t = \alpha r$$

$$(g) \quad a_r = -\omega^2 r = -\frac{v_t^2}{r}$$

$$(h) \quad \omega = \omega_0 + \alpha t$$

$$(i) \quad \theta = \theta_0 + \omega_0 t + \frac{1}{2} \alpha t^2$$

$$(j) \quad \theta = \theta_0 + \frac{\omega^2 - \omega_0^2}{2\alpha}$$

$$(k) \quad \begin{aligned} F_{Total,r} &= -m \frac{v_t^2}{r} \\ F_{Total,\theta} &= m r \alpha \end{aligned}$$

$$(l) \quad I = \sum m_i r_i^2$$

$$(m) \quad \tau_{Total} = \pm r_{\perp} F = \pm r F_{\perp} = I \alpha$$

$$(n) \quad \text{Conversion factor: } 2\pi \text{ radians} = 1 \text{ rev} = 360^\circ \text{ (rev=revolutions)}$$