

Physics Honors Equations Sheet - Lundy

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Useful equations:

$$V_f = V_i + at$$

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

$$V_{av} = \frac{V_i + V_f}{2}$$

$$a = \frac{V_f - V_i}{t}$$

$$\Delta x = \frac{1}{2}at^2 + V_i t$$

$$V_f^2 = V_i^2 + 2a\Delta x$$

$$V_{ix} = \cos \theta \cdot V_i$$

$$V_{iy} = \sin \theta \cdot V_i$$

$$\Delta x_x = V_x \cdot t$$

$$\Delta x_y = \frac{1}{2}a_y t^2 + V_{iy} t$$

$$\Delta x = -\frac{\sin(2\theta) \cdot V_i^2}{a}$$

$$|F_{sf}| = \mu_s \cdot |F_n|$$

$$|F_{kf}| = \mu_k \cdot |F_n|$$

$$F = ma$$

$$F_t = mg + ma$$

$$\text{GPE} = mgh$$

$$\text{EPE} = \frac{1}{2}kx^2$$

$$\text{KE} = \frac{1}{2}mV^2$$

$$W = Fd \cos \theta$$

$$W = \text{KE}_f - \text{KE}_0$$

$$P = \frac{W}{t}$$

$$P = \frac{\Delta E}{t}$$

$$P = F \cdot V_{av}$$

$$p = m \cdot v$$

$$m_{i1}V_{i1} + m_{i2}V_{i2} = (m_1 + m_2)V_f$$

$$J = \Delta p = m \cdot \Delta V = F \cdot t$$

$$\omega_{av} = \frac{\theta}{t}$$

$$\alpha = \frac{\omega_f - \omega_i}{t}$$

$$\theta = \frac{1}{2}\alpha t^2 + \omega_i t$$

$$\omega_f^2 = \omega_i^2 + 2\alpha\theta$$

$$\omega_{av} = \frac{\omega_i + \omega_f}{2}$$

$$s = \theta \cdot r$$

$$V = \omega \cdot r$$

$$a = \alpha \cdot r$$

$$T = F \cdot l$$

$$T_{\text{net}} = I \cdot \alpha$$

$$\text{KE}_{\text{rotational}} = \frac{1}{2} \cdot I \cdot \omega^2$$

$$L = I \cdot \omega$$

$$F_c = \frac{mV^2}{r} = m \cdot \omega^2 \cdot r$$

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

$$F_{\text{grav}} = \frac{G \cdot m_1 \cdot m_2}{d^2}$$

$$G = 6.67 \times 10^{-11} \frac{Nm^2}{kg^2}$$

$$V^2 = \frac{G \cdot m}{r}$$

$$G \cdot m = \frac{4\pi^2 r^3}{t^2}$$

$$t^2 \propto r^3$$

Stuck? Try:

- Listing variables
- Considering which variables are 0
- Drawing a picture
- Looking for an equation that matches the variables