Physics Honors Equations Sheet - Lundy

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2021-22

Useful equations:

$$V_f = V_i + at \qquad V_{\text{av}} = \frac{\triangle x}{t} \qquad V_{\text{av}} = \frac{V_i + V_f}{2}$$

$$a = \frac{V_f - V_i}{t} \qquad \triangle x = \frac{1}{2}at^2 + V_i t \qquad V_f^2 = V_i^2 + 2a\triangle x$$

$$V_{ix} = \cos\theta \cdot V_i \qquad V_{iy} = \sin\theta \cdot V_i$$

$$\triangle x_x = V_x \cdot t \qquad \triangle x_y = \frac{1}{2}a_y t^2 + V_{iy} t \qquad \triangle x = -\frac{\sin(2\theta) \cdot V_i^2}{a}$$

$$|F_{sf}| = \mu_s \cdot |F_n| \qquad |F_{kf}| = \mu_k \cdot |F_n|$$

$$F = ma \qquad F_t = mg + ma$$

$$\text{GPE} = mgh \qquad \text{EPE} = \frac{1}{2}kx^2 \qquad \text{KE} = \frac{1}{2}mV^2$$

$$W = Fd\cos\theta \qquad W = \text{KE}_f - \text{KE}_0$$

$$P = \frac{W}{t} \qquad P = \frac{\triangle E}{t} \qquad P = F \cdot V_{\text{av}}$$

$$p = m \cdot v \qquad m_{i_1}V_{i_1} + m_{i_2}V_{i_2} = (m_1 + m_2)V_f \qquad J = \triangle p = m \cdot \triangle V = F \cdot t$$

$$\omega_{\text{av}} = \frac{\theta}{t} \qquad \alpha = \frac{\omega_f - \omega_i}{t}$$

$$\theta = \frac{1}{2}\alpha t^2 + \omega_i t \qquad \omega_f^2 = \omega_i^2 + 2\alpha\theta \qquad \omega_{\text{av}} = \frac{\omega_i + \omega_f}{2}$$

$$s = \theta \cdot r \qquad V = \omega \cdot r \qquad a = \alpha \cdot r$$

$$T = F \cdot l \qquad T_{\text{net}} = I \cdot \alpha \qquad \text{KE}_{\text{rotational}} = \frac{1}{2} \cdot I \cdot \omega^2$$

$$L = I \cdot \omega \qquad F_c = \frac{mV^2}{r} = m \cdot \omega^2 \cdot r \qquad a_c = \frac{V^2}{r} = \omega^2 \cdot r$$

$$F_{\text{grav}} = \frac{G \cdot m_1 \cdot m_2}{d^2} \qquad G = 6.67 \times 10^{-11}\frac{Nm^2}{kg^2} \qquad V = \frac{2\pi r}{t}$$

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

$$V_{\text{wave}} = \lambda \cdot f \qquad V = \sqrt{\frac{F}{m/L}} \qquad f_{\text{o}} = f \cdot \frac{V \pm V_{\text{o}}}{V \pm V_{\text{s}}}$$

$$F = \frac{k \cdot Q_1 \cdot Q_2}{d^2} \qquad E_{\text{field}} = \frac{F_e}{q} \qquad \text{EPE} = qEd$$

$$V = \frac{\Delta\text{EPE}}{q} \qquad I = \frac{Q}{t} \qquad R = \frac{pl}{A}$$

$$I = \frac{V}{R} \qquad I = nAV_{\text{drift}}q$$

Stuck? Try:

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