

10-25

$$r = .25 \text{ m}$$

$$a_{\text{cent}} = \frac{v^2}{r} \leq \frac{400 \text{ m}}{\text{s}^2}$$

$$v_{\text{max}} = \sqrt{400(.25)} = 10$$

$$\omega_{\text{max}} = \frac{v_{\text{max}}}{r} = \frac{10}{.25} = 40 \frac{\text{rad}}{\text{s}}$$

$$\omega_f^2 - \omega_0^2 = 2\alpha(\theta_f - \theta_0)$$

$$40^2 - 0^2 = 2\alpha(400)$$

$$\underline{\underline{\frac{2 \text{ rad}}{\text{s}^2} = \alpha}} \quad \textcircled{b}$$

$$\omega = \omega_0 + \alpha t$$

$$40 = 0 + 2t$$

$$20 \text{ s} = t \leftarrow \text{spin up}$$

$$\text{spin up + spin down} = \underline{\underline{40 \text{ s}}} \quad \textcircled{c}$$