

10-16

"one time" 10 rev/s
60 rev's lat 15 rev/s

$$\omega_0 = 10 \frac{\text{rev}}{\text{s}} \times \frac{2\pi \text{ rad}}{\text{rev}} = 62.83 \frac{\text{rad}}{\text{s}}$$

$$60 \text{ rev} \times \frac{2\pi \text{ rad}}{\text{rev}} = 376.99 \text{ rad}$$

$$\omega_f = 15 \frac{\text{rev}}{\text{s}} \times \frac{2\pi \text{ rad}}{\text{rev}} = 94.25 \frac{\text{rad}}{\text{s}}$$

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

$$94.25^2 - 62.83^2 = 2\alpha(376.99)$$

$$\underline{6.55 \text{ rad/s}^2 = \alpha} \quad \text{(a)}$$

$$\omega_f = \omega_0 + \alpha t$$

$$94.25 = 62.83 + (6.55)t$$

$$t = 4.90 \text{ s} \quad \text{(b)}$$

$$\omega_f = \omega_0 + \alpha t$$

$$62.83 = 0 + 6.55t$$

$$9.59 \text{ s} = t \quad \text{(c)}$$

$$\theta = \theta_0 + \omega_0 t + \frac{1}{2}\alpha t^2$$

$$\theta = 0 + 0 + \frac{1}{2}(6.55)(9.59)^2$$

$$301.2 \text{ radians} \quad \text{(d)}$$