

Problem 4 pg 219

$$\omega_0 := 6500\text{rpm} \quad \omega_f := 0\text{rpm} \quad \Delta t := 3\text{s}$$

Find **angular acceleration**:

SOLUTION : CONSTANT ACCELERATION PROBLEM :

convert Δt into minute $\Delta t = 0.05\text{min}$

$$\left(\begin{array}{ccccc} \alpha & \omega_f & \omega_0 & \Delta\theta & \Delta t \\ \text{"?"} & 0 & 6500\text{rpm} & \blacksquare & 0.05\text{min} \end{array} \right)$$

$$\alpha := \frac{\omega_f - \omega_0}{\Delta t} \quad \alpha = -1.3 \times 10^5 \frac{\text{rev}}{\text{min}^2} \quad \text{or} \quad \alpha = -36.111 \frac{\text{rev}}{\text{sec}^2}$$

Problem 5 pg 219

$$x := 3.5\text{m} \quad \Delta\theta := 15\text{rev}$$

Find diameter of the ball

SOLUTION : rolling with out slipping

$$x = R\theta \quad \theta \text{ must be in radians} \quad 1\text{rev} = 2 \cdot \pi \text{radians}$$

$$\Delta\theta := 15\text{rev} \cdot \left(2 \cdot \pi \frac{\text{rad}}{\text{rev}} \right) \quad \Delta\theta = 94.2\text{rad}$$

$$R_{\text{ball}} := \frac{x}{\Delta\theta} \quad D_{\text{ball}} := 2 \cdot R_{\text{ball}} \quad D_{\text{ball}} = 0.074\text{m}$$