

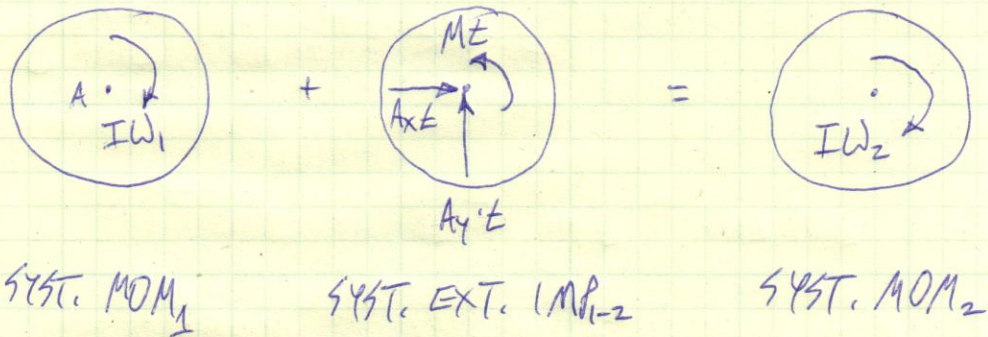
17.52

$$M = 25 \text{ kg}, t = 4.2 \text{ MIN} = 252 \text{ s}$$

$$\omega_1 = \left( 3600 \frac{\text{REV}}{\text{MIN}} \right) \left( \frac{\text{MIN}}{60 \text{ s}} \right) \left( \frac{2\pi}{\text{REV}} \right) = 120\pi \frac{\text{RAD}}{\text{s}}, \omega_2 = 0$$

$$M = 1.2 \text{ N}\cdot\text{m}, \text{ FIND } K$$

PRINCIPLE OF IMPULSE AND MOMENTUM:

ANGULAR MOMENTUM ABOUT A  $\uparrow$ :

$$-I\omega_1 + M\epsilon = -I\omega_2$$

$$I = mK^2$$

$$-mK^2\omega_1 + M\epsilon = 0$$

$$K = \sqrt{\frac{M\epsilon}{m\omega_1}} = \sqrt{\frac{(1.2 \text{ N}\cdot\text{m})(252 \text{ s})}{(25 \text{ kg})(120\pi \frac{\text{RAD}}{\text{s}})}} \cdot \left( \frac{\text{kg}\cdot\text{m}}{\text{N}\cdot\text{s}^2} \right)$$

$$K = 0.1791 \text{ m}$$