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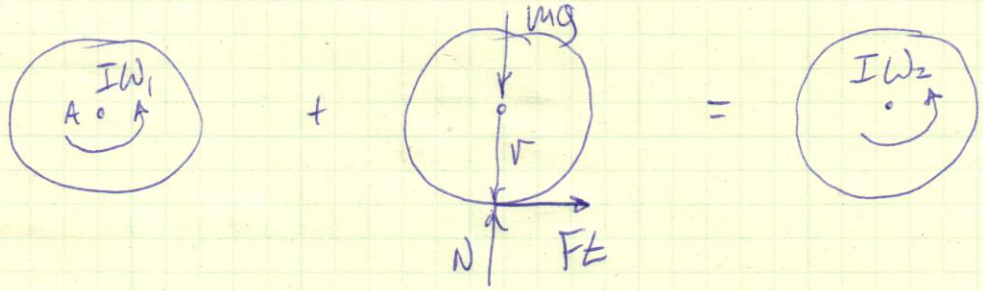
$W_A = 5^{LB}$, $r = 3^{IN} = \frac{1}{4}\,ft$, $\omega_1 = 0$, $v = 50\,\frac{ft}{s}$

$\mu_K = 0.20$; FIND t FOR ω_2 = CONSTANT.



ANGULAR MOMENTUM ABOUT A $\pm$:

$$I\omega_1^{\,0} + Ft \cdot r = I\omega_2$$

$$t = \frac{I\omega_2}{Fr}$$

$$I = \frac{1}{2}mr^2$$

$$v = r\omega, \quad \omega_2 = \frac{v}{r}$$

$$F = \mu_K N = \mu_K mg$$

$$t = \frac{\left(\frac{1}{2}mr^2\right)\left(\frac{v}{r}\right)}{(\mu_K mg)\,r} = \frac{v}{2\mu_K g} = \frac{\left(50\,\frac{ft}{s}\right)}{2(0.2)\left(32.2\,\frac{ft}{s^2}\right)}$$

$$\boxed{t = 3.882^{s}}$$