Problem 1

An 8cm diameter hard drive platter accelerates at a constant rate of 150 rad/s^2. If the hard drive weighs a uniformly distributed .05 kg and we approximate the hard drive as a flat circular disc, what moment does the motor need to exert to accelerate the drive at this rate?

$$M = I\alpha$$

$$M = \left(\frac{1}{2} m r^2\right)\left(150\ rad/s^2\right)$$

$.05\ kg$ $.04m$

$$\boxed{M = .006\ Nm}$$