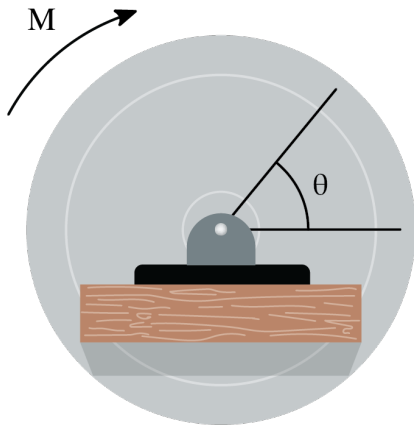If a couple moment $M = (\theta^2 + 2\theta + 2)Nm$ is applied to a disk, determine the work of the couple moment after the disk has rotated 4 times. What would be the sign of the work if the moment was applied in the opposite direction?
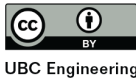
M

θ

$$dU = Md\theta$$

$$U = \int Md\theta$$

$$U = \int_0^{4(2\pi)} (\theta^2 + 2\theta + 2)d\theta$$

$$= \left[\frac{1}{3}\theta^3 + \theta^2 + 2\theta \right]_0^{8\pi}$$

$$\boxed{U = 5973.7 J}$$

If moment were applied in opposite direction

⌐o $\boxed{\text{would still be positive}}$