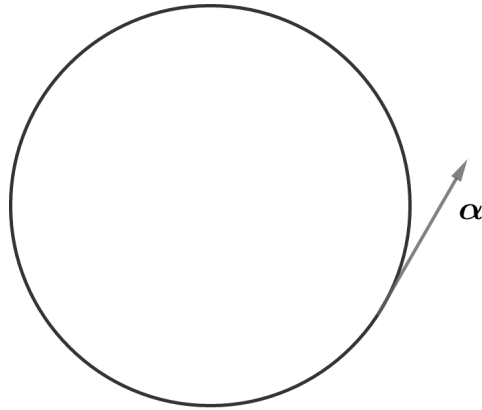


# 2018B F=ma Exam: Problem 5

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For constant angular acceleration, we can use our kinematics equation:

$$\omega_0^2 + 2\alpha\theta = \omega_f^2$$

For spinning up to speed,

$$0 + 2\alpha_1(10)(2\pi) = \omega^2$$

$$\alpha_1 = \frac{\omega^2}{40\pi}$$

For slowing down to rest,

$$\omega^2 - 2\alpha_2(50)(2\pi) = 0$$

$$\alpha_2 = \frac{\omega^2}{200\pi}$$

Thus,

$$\frac{\alpha_1}{\alpha_2} = 5$$

so the answer is  D.