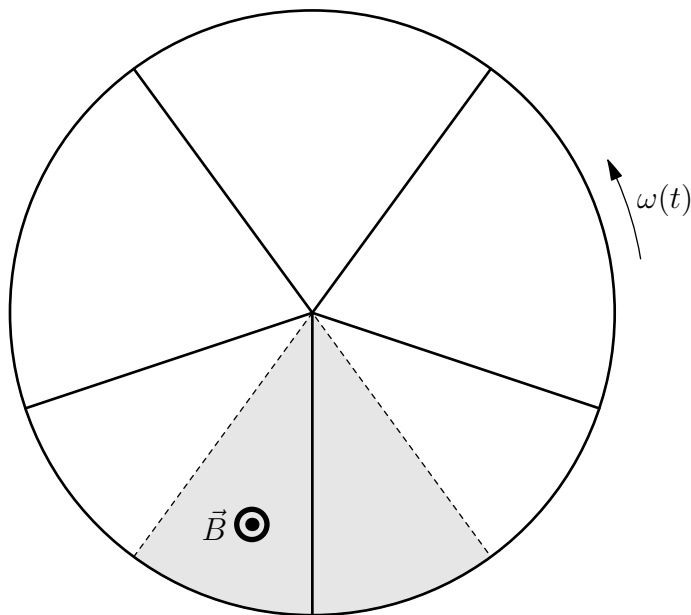# M99E.2—5-Spoke Wheel

Problem

A 5-spoked wheel (radius r), made out of thin wire with resistance per unit length λ is freely rotating with angular velocity $\omega(t)$ in a wedge-shaped constant magnetic field B whose field lines are parallel to the axis of the wheel:

a)   Calculate the resistance of all 10 wire segments.

b)   Find the current in the bottom center spoke.

c)   Determine $\omega(t)$ for an initial angular velocity $\omega(0) = \omega_0$, if the wheel has moment of inertia I.