HW1 solution

$$\text{e.m.f.} = \int_a^b \vec{f}_{\text{mag}} \cdot \vec{dl} = \int_a^b (R \sin\theta \vec{\omega} \times \vec{B}) \cdot \vec{dl} = \omega B R^2 \int_0^{\pi/2} d\theta \sin\theta \cos\theta = \frac{\omega B R^2}{2}$$