PH 102 Quiz 7

1. A magnetic field of $0.3\,\mathrm{T}$ is directed perpendicular to the plane of a circular loop of wire of radius $25\,\mathrm{cm}$. Find the magnetic flux through the area enclosed by this loop.

- ☐ $2.3 \times 10^{-2}\,\mathrm{T}$
- ☐ $7.1 \times 10^{-3}\,\mathrm{T{\cdot}m^2}$
- ☐ $4.8 \times 10^{-1}\,\mathrm{T{\cdot}m^2}$
- ■ $5.9 \times 10^{-2}\,\mathrm{T{\cdot}m^2}$

2. A magnet and a non-magnet of the same mass are dropped into copper tubes of equal length. Which takes longer to come out?

- ■ The magnet.
- ☐ The non-magnet.
- ☐ It takes the same amount of time.
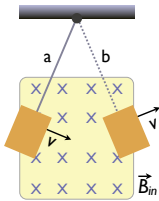
3. A flat metal plate swings at the end of a bar as a pendulum, as shown. When the pendulum is at position **a**, what are the directions of the induced currents and (magnetic) force on the bar, respectively?

- ■ Clockwise; to the left
- ☐ Counterclockwise; to the right
- ☐ Clockwise; to the right

(a)   (b)   (c)
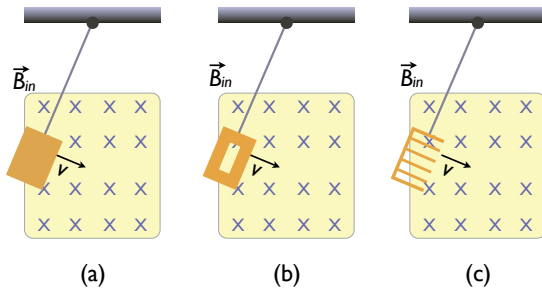
4. Which pendulum experiences the largest (magnetic) force?

- ■ a
- ☐ b
- ☐ c
- ☐ they all experience the same force
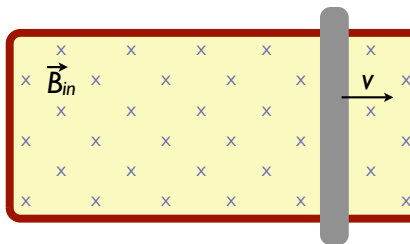
5. A conducting bar slides on two fixed conducting rails with, a constant magnetic field pointing into the page. What are the directions of the induced current and the force on the bar, respectively?

- ■ Counterclockwise; to the left
- ☐ Clockwise; to the left
- ☐ Counterclockwise; to the right
- ☐ Clockwise; to the right