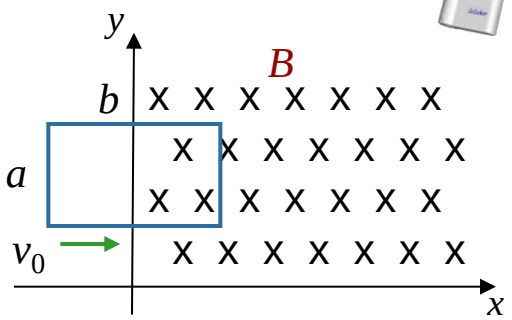
Calculation

A rectangular loop (height = a, length = b, resistance = R, mass = m) coasts with a constant velocity v_0 in $+x$ direction as shown. At $t = 0$, the loop enters a region of constant magnetic field B directed in the $-z$ direction.

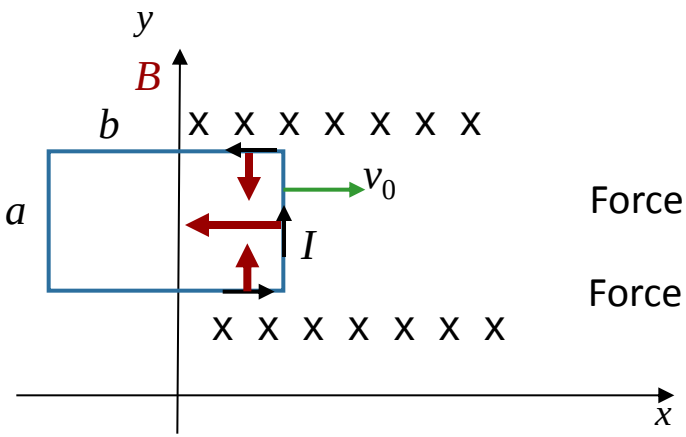


What is the direction of the net force on the loop just after it enters the field?

$$emf = -\frac{d\Phi_B}{dt}$$

A) $+y$ B) $-y$ C) $+x$ D) $-x$

Force on a current in a magnetic field: $\vec{F} = I\vec{L} \times \vec{B}$



Force on top and bottom segments cancel (red arrows)

Force on right segment is directed in $-x$ direction.