A circular conductor in the x-y plane is embedded in an external magnetic field $\vec{B} = 0.2 \cdot \cos(120\pi t) \, \hat{a}_z \, T$. Assume that the conductor joining the two ends of the resistor R is perfect (the magnetic field produced by $I(t)$ is negligible).

(a) Find both $V_{ab}(t)$ and $I(t)$ as a function of time $t$.

(b) In which direction does the induced current flow if the magnetic field (pointing out of the paper plane) decreases in time?

(c) How would the result from a) change if $\vec{B}$ would point into the $\hat{a}_x$ direction?