Answer on Question #56032, Physics / Electromagnetism

If a coil of area 10 cm2 and 10 turns with a magnetic field directed perpendicular to the plane and is changing at the rate of 10^8 gauss/second. The resistance of the coil is 20 ohms. The current in the coil will be? and how?

Solution $I = \frac{\varepsilon}{R} = \frac{-N\frac{\partial \Phi}{\partial t}}{R} = -\frac{NS}{R}\frac{\partial B}{\partial t} = -\frac{10\ 10^{-4}}{20} * 10^4 = -0.5$ A, "-" shows Lenz's law.

Answer: $0{,}5 * 10^5$ A, direction is determined by Lenz's law.