NAME: _____ SECTION: _____

PHYSICS 7B – QUIZ 3

1. A square loop of wire (side a) lies on a table, a distance s from a very long straight wire, which carries a current I.
   (a) Find the magnetic flux through the loop
   (b) If we now pull the loop directly *away* from the wire at speed v, what emf is generated? What is the direction of the current in the loop?
   (c) What if the loop is pulled to the *right* at speed v, instead of away?

2. A uniform, time-dependent magnetic field B(t), pointing straight up, fills a circular region. Find the induced electric field.

3. A capacitor C is charged up to a potential V and connected to an inductor L. At t=0 the switch is closed. Write the differential equation to find the current in the circuit as a function of time. How does your answer change if a resistor R is included in series with C and L? (Hint: use Kirchhoff's law)