Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Section \_\_\_\_\_\_\_ **P212: Quiz for Week 10**

The circuit shown below consists of a 9 V battery, three resistors, an ideal inductor and a switch. Assume that the switch has been open for a long time.

*E*

## L

# *R1*

## 9 V

# *R*2

# *R*3

# *I1*

# *I3*

R1 = 30 Ω

R2 = 100 Ω

R3 = 150 Ω

L = 0.02 H

1). The switch is now closed at *t* = 0. Immediately afterwards, what is the current I3 flowing through resistor R3? [5]

2). A very long time after the switch has been closed, what is the voltage drop across the inductor? [3]

3). A very long time after the switch has been closed, what is the current I1 through R1? [7]

4). The switch is now suddenly opened. How long after opening the switch does it take for the current through the inductor to reach 1/e of its value just before the switch is opened? [5]