

Name:

Math 216 Quiz 1

October 1, 2015

Directions: WRITE YOUR NAME ON THIS QUIZ! Except where indicated, merely finding the answer to a problem is not enough to receive full credit; you must show how you arrived at that answer.

1) Consider a simple RL circuit with one voltage source, one resistor, and one inductor, where the value of the resistance is 2Ω and the value of the inductance is $.04 H$

a) (3 points) State Ohm's Law.

b) (3 points) State the consequence of Faraday's Law that relates the voltage drop across an inductor to the current.

c) (3 points) Use Kirchoff's voltage law to obtain a differential equation for the total voltage $E(t)$ at time t .

d) (16 points) If $E(t) = t^2$ (which is completely unrealistic), solve for the current $I(t)$ given that $I(0) = 0 A$.