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Quizzes 10 and 11, MTH 205, Fall 2014

Ayman Badawi

QUESTION 1. (i) A metal bar at Temperature 100 C is placed in a room that has constant temperature 0 C. After 20 minutes the bar temperature reaches 50 C. a) How long will it take for the metal bar to reach temperature 25 C? What is the temperature of the bar after 10 minutes?

(ii) A circuit has electric source equals to 5 Volts, a constant-resistor $R = 50\ Ohms$, a constant-inductive $L = 1\ henry$, and 0 initial current. a) Find the current in the circuit at any time t. b) Find the steady-state-current.

(iii) A circuit has electric source $E(t) = t + 3$, a constant-resistor $R = 5\ \ Ohms$, a constant-inductive $L = 0.5\ henry$, a constant-capacitor $C = \frac{1}{12}\ Farad$, 0 initial current, and 0 initial charge. a) Find the amount of charge at the capacitor at any time t. b) Find the current in the circuit at any time t. c) Find the steady-state-current.

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