EE 287-CIRCUIT THEORY

GROUP ASSIGNMENT 2

Due Date: 21/11/2019 (To be submitted in groups of 3 or 4 members)

1. An R-L circuit consists of a **100 volt** DC battery connected in series with a 2 Henry inductor and a 6 ohm resistor
   a. Sketch the circuit diagram.
   b. Use Kirchhoff's law to write the Initial Value Problem; assume current starts to flow when the open switch is closed.
   c. Determine the expression for the current in the circuit for $t \geq 0s$
   d. Using Matlab, plot the current I(t).
   e. What is the steady-state current (I_∞) for this circuit by formula? Does your answer agree with the picture in part [d]?
   f. What is the time constant (τ) for this circuit? Does the picture in part [e] suggest that **$I(5\tau) \approx I(\infty)$**

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