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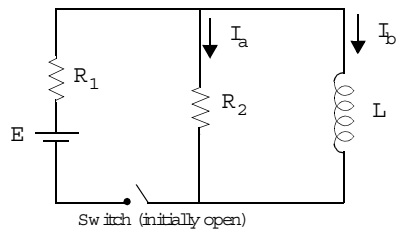
Physics 151

Prof. Thomson's Section

Quiz on Ch 30

April 8, 2005

Consider the circuit shown, with two resistors, one inductor, one battery and one switch.



$$E = 10\text{V}$$

$$R_1 = 2\Omega \quad R_2 = 4\Omega$$

$$L = 6\text{H}$$

(a) (3pts) Calculate I_a and I_b , the current through resistor R_2 and the inductor L , respectively, just after the switch S is closed ($t = 0^+$)

$$I_a =$$

$$I_b =$$

(b) (2pts) At some later time, the current through the inductor is 2.433 A and is increasing at a rate 0.570 A/s . Calculate the energy stored in the inductor at this time. ($t = t_1$)

$$\text{Energy} =$$

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(c) (3pts) Calculate I_a and I_b a long time after the switch is closed. ($t = t_2$)

$I_a =$
$I_b =$

(d) (2pts) Finally, switch S is now opened. Calculate I_a and I_b just afterward. ($t = t_3 > t_2$)

$I_a =$
$I_b =$