Inductors

1. For the circuit shown below:
   (a) What is $I_L$ at time $t_0$ plus?
   (b) What is the eventual value of $I_L$ as time approaches infinity?
   (c) What is $V_L$ at time $t_0$ plus?
   (d) What is the eventual value of $V_L$ as time approaches infinity?
   (e) Draw the graph showing the shape of $I_L$ versus time that includes $I_L$ at $1ms$
   (f) Draw the graph showing the shape of $V_L$ versus time
   (g) Fill in the y axis units for both graphs

![Circuit Diagram](image-url)
2. For the circuit shown below:
   (a) What is $I_L$ at time $t_0$ plus?
   (b) What is $V_R$ at time $t_0$ plus?
   (c) What is the eventual value of $I_L$ as time approaches infinity?
   (d) What is $V_L$ at time $t_0$ plus?
   (e) What is the eventual value of $V_L$ as time approaches infinity?
   (f) What is the eventual value of $V_R$ as time approaches infinity?
   (g) Draw the graph showing the shape of $I_L$ for the first 60us. Your graph should include the time and current where $I_L$ has risen to 63% of its final value.
   (h) Draw the graph showing the shape of $V_L$ versus time for the first 60us. Your graph should include the time and voltage where $V_L$ has dropped by 63% from its initial value.
   (i) Fill in the y axis units for both graphs
3. For the circuit below:

(a) What is the value of $I_L$ at time $t_0^+$?
(b) What is the value of $V_L$ at time $t_0^+$?
(c) What is the value of $I_{SRC}$ at time $t_0^+$?
(d) What is the value of $I_L$ at time $t = \infty$?
(e) What is the value of $I_{R2}$ at time $t = \infty$?
4. The circuit below had been energized since before dinosaurs roamed the earth. At some later point in time however, a 50-ton titanosaur Argentinosaurus huinculensis steps on the 2mA current source, instantaneously removing it from the circuit at time $t = 0$.

(a) What is the value of $I_L$ at time $t_0^-$?
(b) What is the value of $I_R$ at time $t_0^-$?
(c) What is the value of $V_L$ at time $t_0^-$?
(d) What is the value of $I_L$ at time $t_0^+$?
(e) What is the value of $I_R$ at time $t_0^+$?
(f) What is the value of $V_L$ at time $t_0^+$?
(g) What is the value of $I_L$ at time $t = \infty$?
(h) What is the value of $I_{R1}$ at time $t = \infty$?