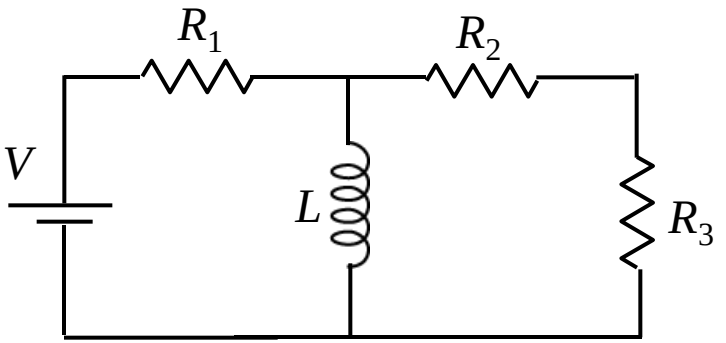
Calculation

The switch in the circuit shown has been open for a long time. At $t = 0$, the switch is closed.

What is dI_L/dt, the time rate of change of the current through the inductor immediately after switch is closed



$V_L(t = 0+) = V(R_2 + R_3)/(R_1 + R_2 + R_3)$

A) $\frac{dI_L}{dt} = \frac{V}{L}\frac{R_2 + R_3}{R_1}$ B) $\frac{dI_L}{dt} = 0$ C) $\frac{dI_L}{dt} = \frac{V}{L}\frac{R_2 + R_3}{R_1 + R_2 + R_3}$ D) $\frac{dI_L}{dt} = \frac{V}{L}$

The time rate of change of current through the inductor $(dI_L/dt) = V_L/L$

$$\rightarrow \frac{dI_L}{dt} = \frac{V}{L}\frac{R_2 + R_3}{R_1 + R_2 + R_3}$$