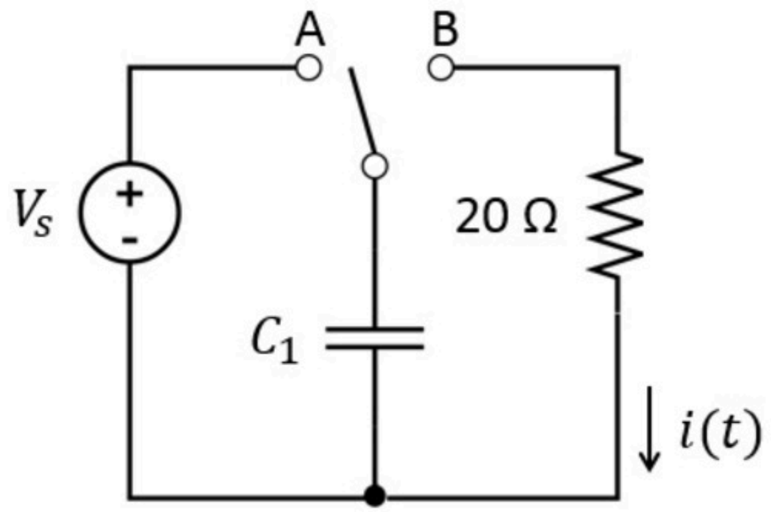
First order circuits 009

Problem has been graded.

For $t < 0$, the switch has been in position *A* for a long time. At time $t = 0$, it moves from *A* to *B*.

Find the time t_1 it takes to reduce the capacitor voltage to 37% of its initial voltage ($\frac{1}{e} \approx .37$).

What is the total energy *E* received by the resistor from the moment the switch is flipped until the capacitor is completely discharged?



Given Variables:

Vs : 12 V

C1 : 2 uF

Calculate the following:

t1 (ms) :

0.04 ✓

E (mJ) :

0.144 ✓

Hint: To calculate E, consider where the energy is coming from. Verify by integrating the P(t).