

A switching current source is connected to a $1\text{-}\mu\text{F}$ capacitor. The source current is at $+5\text{ mA}$ for 1 ms , then switches to -2 mA for 2.5 ms , and then repeats the cycle continuously.

Make a good *quantitative* sketch of the capacitor voltage as a function of time. (A quantitative sketch includes numbers — for intercepts, peak values, asymptotes, and slopes.)

You can assume the the capacitor voltage is 0 at $t = 0$.

How would the sketch change if the current source were at -2 mA for only 1 ms ? If the current source kept switching back and forth forever, what would be the eventual capacitor voltage after a very long time?

