Charging of an RC Circuit

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Constants and Definitions:

$k \equiv 1000 \cdot ohm$ $kHz := 1000 \cdot Hz$ $MHz := 10^{6} \cdot Hz$ $\mu F := 10^{-6} \cdot farad$ $dB(x) := 20 \cdot \log(x)$

$V_{in} := 1 \cdot volt$

$R \equiv 5 \cdot k$ Resistance of Circuit

$C \equiv 1 \cdot \mu F$ Capacitance of Circuit

Equations for Charging and Discharging RC Circuits

$t := 0 \cdot sec, \frac{5 \cdot R \cdot C}{500} .. 5 \cdot R \cdot C$ Range of time for graphing, from 0 to 5*RC

$V_{charge}(t) := V_{in} \cdot \left(1 - e^{-\frac{t}{R \cdot C}}\right)$ Equation for voltage of a charging RC circuit

$V_{discharge}(t) := V_{in} \cdot e^{-\frac{t}{R \cdot C}}$ Equation for voltage of discharging RC circuit.

$i(t) := \frac{V_{in}}{R} \cdot e^{-\frac{t}{R \cdot C}}$ Equation for current in RC Circuit