Chapter 6, Solution 70.

Using a single op amp, a capacitor, and resistors of 100 kΩ or less, design a circuit to implement

$$v_0 = -50 \int_0^t v_i(t)\,dt$$

Assume $v_o = 0$ at $t = 0$.

Solution

One possibility is as follows:

$$\frac{1}{RC} = 50$$

Let R = 100 kΩ, $\quad C = \dfrac{1}{50 x 100 x 10^3} = 0.2\,\mu F$