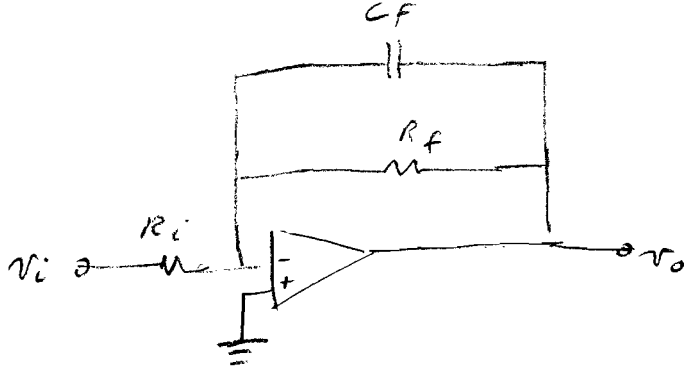


Design an active first-order lowpass filter with the following transfer function using a $1 \mu\text{F}$ capacitor.

$$H(s) = -\frac{100}{s + 10}$$

No aid given, received, or observed: _____



$$H(\omega) = -\frac{R_f}{R_i} \left(\frac{1}{1 + j\omega C_f R_f} \right)$$

$$H(5) = \frac{-100}{5 + 10}$$

$$H(\omega) = \frac{-100}{j\omega + 10}$$

$$H(\omega) = -\frac{100}{10} \left(\frac{1}{1 + j\omega (1/10)} \right)$$

$$C_f R_f = 1/10$$

$$(1/\mu) R_f = 1/10$$

$$R_f = 100 \text{ k}\Omega$$

$$\frac{R_f}{R_i} = 10$$

$$\frac{100 \text{ k}}{R_i} = 10$$

$$R_i = 10 \text{ k}\Omega$$