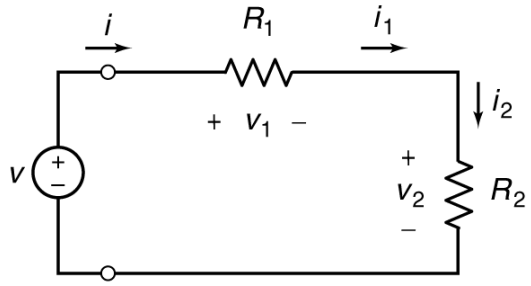
DC Circuits (in the Time Domain)

Voltage Divider

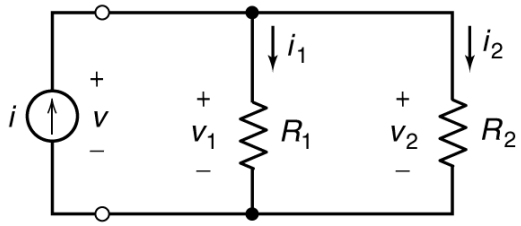


$$i_1 = i_2 = i$$

$$v_1 = \frac{R_1}{R_1 + R_2} v$$

$$v_2 = \frac{R_2}{R_1 + R_2} v$$

Current Divider



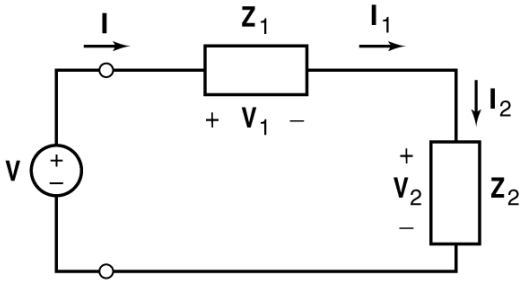
$$v_1 = v_2 = v$$

$$i_1 = \frac{R_2}{R_1 + R_2} i$$

$$i_2 = \frac{R_1}{R_1 + R_2} i$$

AC Circuits in the Frequency Domain

Voltage Divider

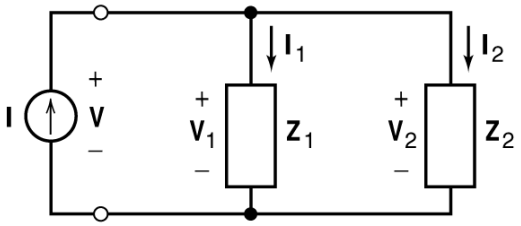


$$\mathbf{I}_1 = \mathbf{I}_2 = \mathbf{I}$$

$$\mathbf{V}_1 = \frac{\mathbf{Z}_1}{\mathbf{Z}_1 + \mathbf{Z}_2} \mathbf{V}$$

$$\mathbf{V}_2 = \frac{\mathbf{Z}_2}{\mathbf{Z}_1 + \mathbf{Z}_2} \mathbf{V}$$

Current Divider



$$\mathbf{V}_1 = \mathbf{V}_2 = \mathbf{V}$$

$$\mathbf{I}_1 = \frac{\mathbf{Z}_2}{\mathbf{Z}_1 + \mathbf{Z}_2} \mathbf{I}$$

$$\mathbf{I}_2 = \frac{\mathbf{Z}_1}{\mathbf{Z}_2 + \mathbf{Z}_2} \mathbf{I}$$