Table 3.10-1 Equivalent Circuits for Series and Parallel Elements

Series resistors

\[ i = i_1 = i_2, \quad v_1 = \frac{R_1}{R_1 + R_2} v, \quad \text{and} \quad v_2 = \frac{R_2}{R_1 + R_2} v \]

\[ R_s = R_1 + R_2 \quad \text{and} \quad v = R_s i \]

Parallel resistors

\[ v = v_1 = v_2, \quad i_1 = \frac{R_2}{R_1 + R_2} i, \quad \text{and} \quad i_2 = \frac{R_1}{R_1 + R_2} i \]

\[ R_p = \frac{R_1 R_2}{R_1 + R_2} \quad \text{and} \quad v = R_p i \]

Series voltage sources

\[ i = i_1 = i_2 \quad \text{and} \quad v = v_1 + v_2 \]

\[ v_s = v_1 + v_2 \]

Parallel current sources

\[ v = v_1 = v_2 \quad \text{and} \quad i = i_1 + i_2 \]

\[ i_p = i_1 + i_2 \]