

11. From $V_a - \mathcal{E}_1 = V_c - ir_1 - iR$ and $i = (\mathcal{E}_1 - \mathcal{E}_2)/(R + r_1 + r_2)$, we get

$$\begin{aligned} V_a - V_c &= \mathcal{E}_1 - i(r_1 + R) \\ &= \mathcal{E}_1 - \left(\frac{\mathcal{E}_1 - \mathcal{E}_2}{R + r_1 + r_2} \right) (r_1 + R) \\ &= 4.4 \text{ V} - \left(\frac{4.4 \text{ V} - 2.1 \text{ V}}{5.5 \Omega + 1.8 \Omega + 2.3 \Omega} \right) (2.3 \Omega + 5.5 \Omega) \\ &= 2.5 \text{ V} . \end{aligned}$$