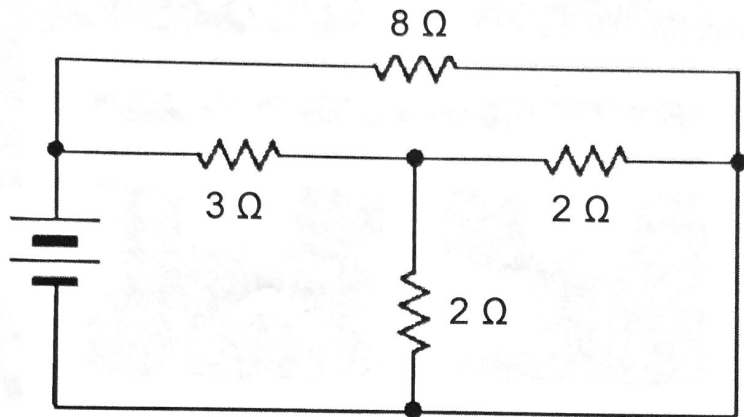


ECE3 Spring 2019
Quiz 1

10



$$\frac{1}{2} + \frac{1}{2} = \frac{1}{R_2} \rightarrow R_2 = 1$$

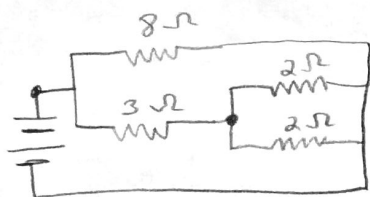
$$\frac{1}{3} + \frac{1}{8} = \frac{1}{R_1} = \frac{8}{24} + \frac{3}{24} = \frac{11}{24}$$

$$R_1 = \frac{24}{11}$$

$$\frac{1}{2} + \frac{1}{2} = \frac{1}{R_2} = 1 \quad R_2 = 1$$

$$R_1 + R_2 = \frac{24}{11} + \frac{11}{11} = \frac{35}{11}$$

This circuit can be reduced to a voltage source and one resistor. What is the value of that one final resistor? $R_{eq} \Rightarrow$ value of the one final resistor



R_1 is the equivalent resistance between the two 2Ω resistors in parallel:

$$\frac{1}{2} + \frac{1}{2} = \frac{1}{R_1} \rightarrow R_1 = 1$$

R_2 is the equivalent resistance between the 3Ω and R_1 resistor in series: $R_2 = 3 + 1 = 4$

R_{eq} is the equivalent resistance between R_2 and the 8Ω resistor in parallel: $\frac{1}{8} + \frac{1}{4} = \frac{1}{R_{eq}}$

$$\frac{1}{R_{eq}} = \frac{1}{8} + \frac{2}{8} = \frac{3}{8}$$

$$R_{eq} = \frac{8}{3} \Omega \approx 2.67 \Omega$$