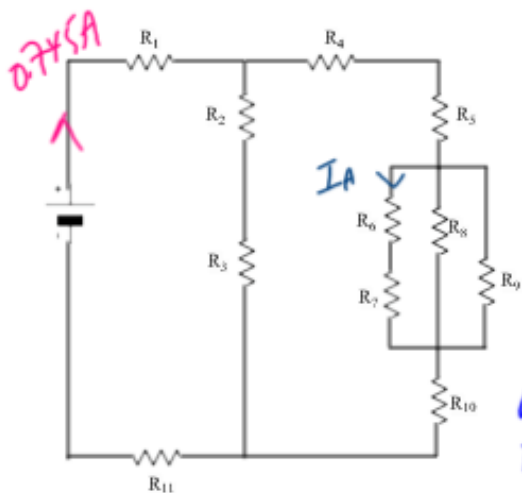


# Circuit #1



$$R_A = 6.00\Omega + 7.00\Omega = 13.00\Omega$$

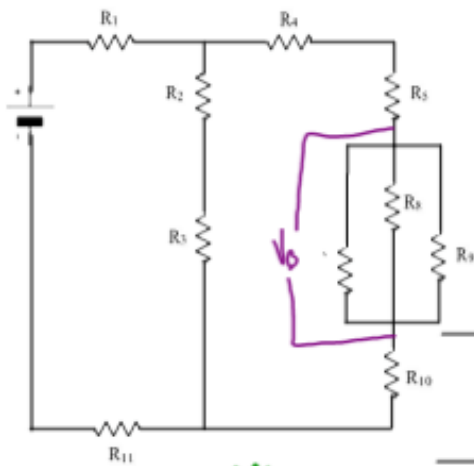
$$\frac{1}{R_B} = \frac{1}{13.0} + \frac{1}{18.0} + \frac{1}{7.0}$$

$$R_B = 3.19\Omega$$

$$R_C = 4.00\Omega + 5.00\Omega + 3.19\Omega + 10.00\Omega$$

$$R_C = 22.19\Omega$$

$$R_D = 2.0\Omega + 3.0\Omega = 5.00\Omega$$



$$\frac{1}{R_E} = \frac{1}{5.00\Omega} + \frac{1}{22.19\Omega}$$

$$R_E = 4.08\Omega$$

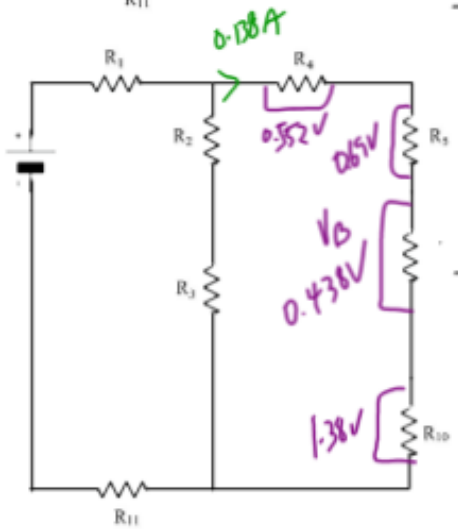
$$R_F = 1.00\Omega + 4.08\Omega + 11.00\Omega$$

$$R_F = R = 16.1\Omega$$

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$$I = \frac{V}{R} = \frac{12.0V}{16.1\Omega} = 0.745A$$


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$$V_1 = I R_1 = 0.745A \times 1.00\Omega = 0.745V$$

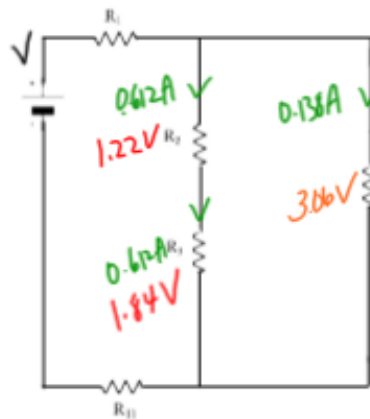
$$V_{11} = I R_{11} = 0.745A \times 11.0\Omega = 8.195V$$

$$V_E = 12.0V - 0.745V - 8.195V = 3.06V$$


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$$I = \frac{V_E}{R_D} = \frac{3.06V}{5.00\Omega} = 0.612A$$

$$I = \frac{V_E}{R_C} = \frac{3.06V}{22.19\Omega} = 0.138A$$



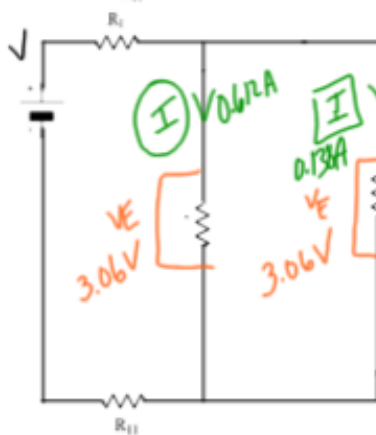
$$V_2 = R_2 \cdot 0.612A = 1.22V$$

$$V_3 = R_3 \cdot 0.612A = 1.84V$$

$$V_4 = R_4 \cdot 0.138A = 0.552V$$

$$V_5 = R_5 \cdot 0.138A = 0.69V$$

$$V_{10} = R_{10} \cdot 0.138A = 1.38V$$



$$V_6 = 3.06V - 0.552V - 0.69V - 1.38V = 0.438V$$

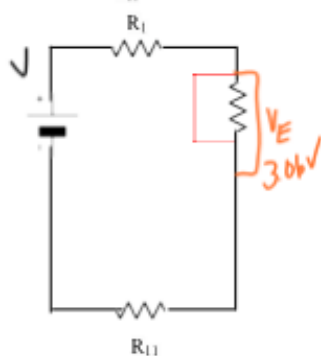
$$V_8 = V_6 = 0.438V$$

$$V_9 = V_6 = 0.438V$$

$$I_9 = \frac{0.438V}{9.00\Omega} = 0.0487A$$

$$I_8 = \frac{0.438V}{8.00\Omega} = 0.0548A$$

$$I_A = 0.138A - 0.0487A - 0.0548A = 0.0345A$$



$$V_6 = R_6 \times 0.0345A = 0.207V$$

$$V_7 = R_7 \times 0.0345A = 0.242V$$

