

電験革命

理論編

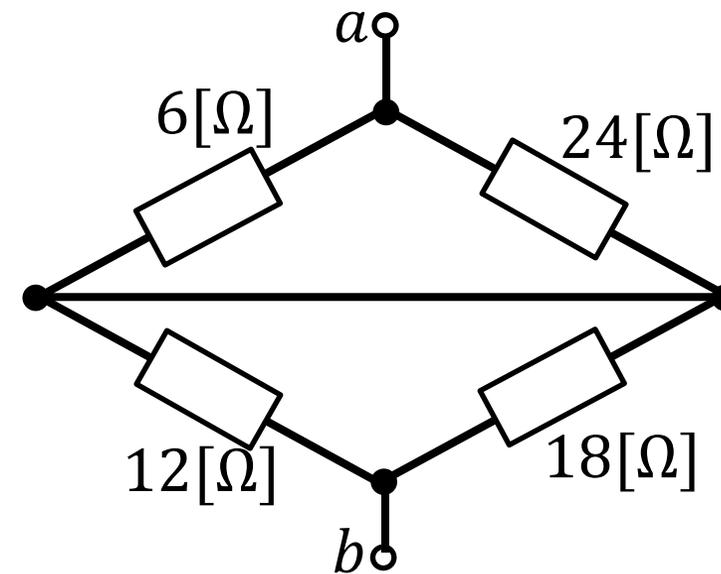
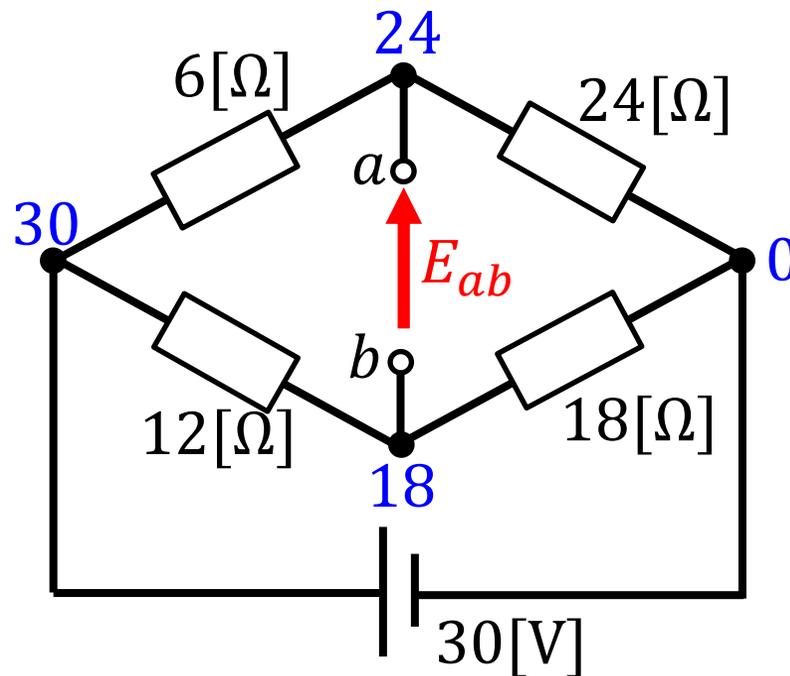
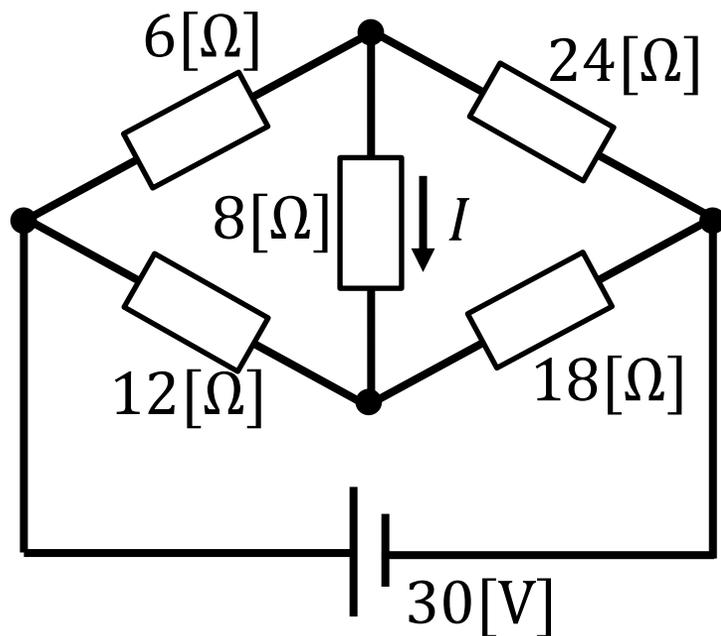
作成者：Lese



【直流回路】11.ミルマンの定理



■ HW I を求めよ



$$R_{ab} = \frac{6 \times 24}{6 + 24} + \frac{12 \times 18}{12 + 18}$$

$$R_{ab} = 4.8 + 7.2$$

$$R_{ab} = 12$$

$$I = \frac{E_{ab}}{R_{ab} + R}$$

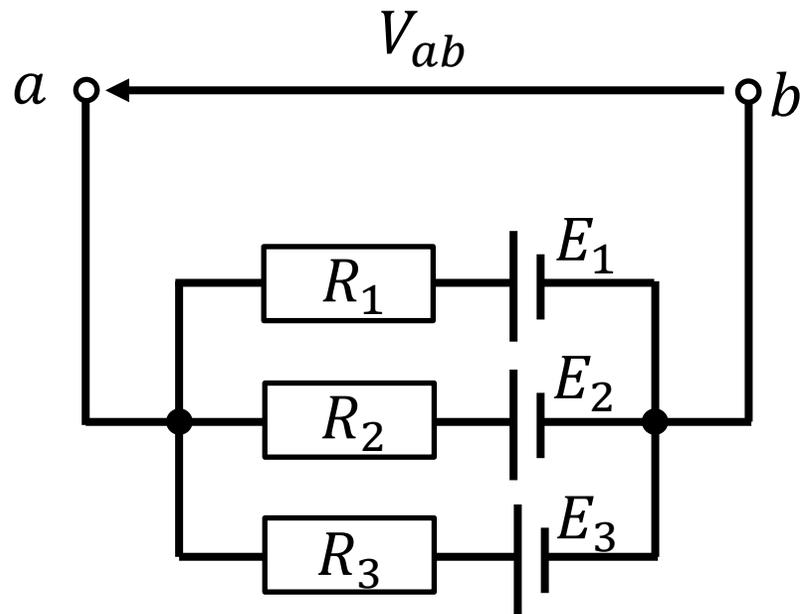
$$I = \frac{6}{R_{ab} + 8}$$

$$I = \frac{6}{12 + 8}$$

$$I = 0.3[\text{A}]$$

【直流回路】11.ミルマンの定理

- **ミルマンの定理**・・・直列に抵抗をもつ複数の電圧源が並列に接続されているときの出力電圧を求める定理

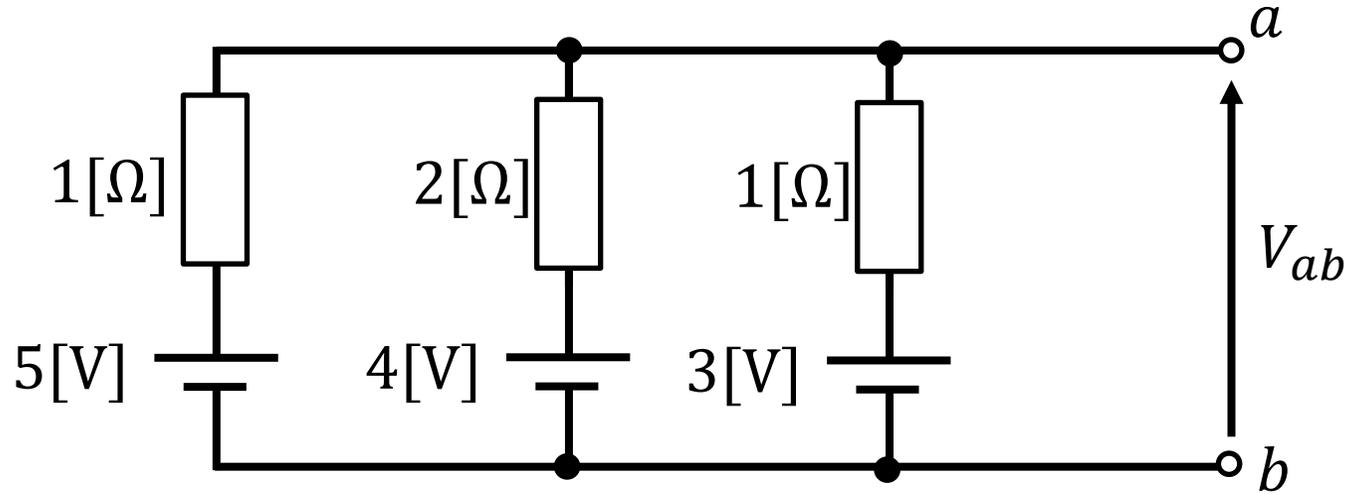


$$V_{ab} = \frac{\frac{E_1}{R_1} + \frac{E_2}{R_2} + \frac{E_3}{R_3}}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}}$$

【直流回路】11.ミルマンの定理



例題1



$$V_{ab} = \frac{\frac{5}{1} + \frac{4}{2} + \frac{3}{1}}{\frac{1}{1} + \frac{1}{2} + \frac{1}{1}}$$

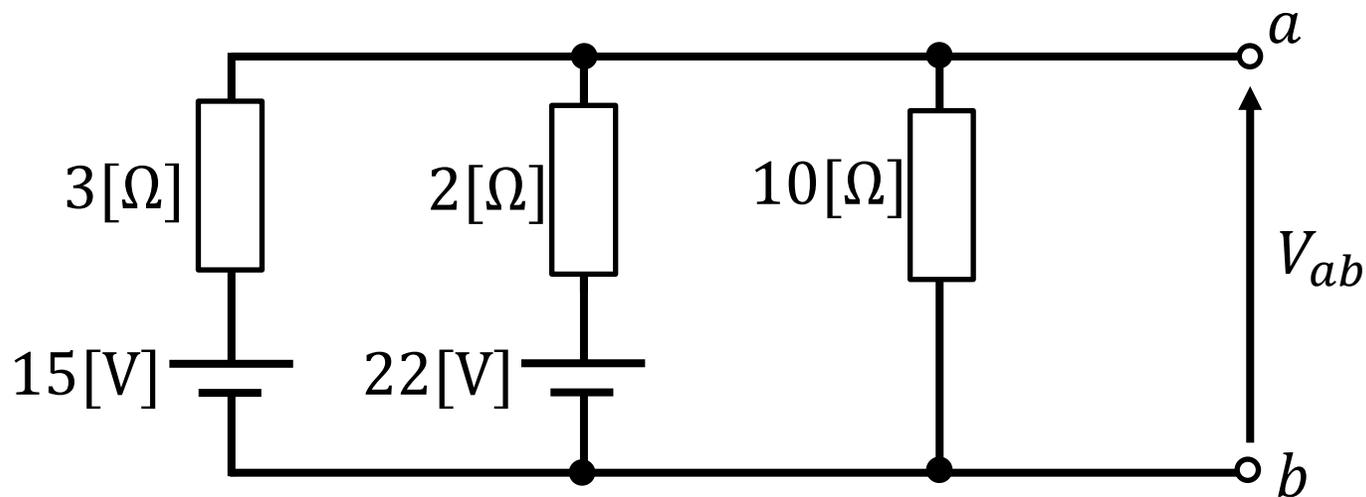
$$V_R = \frac{10 + 4 + 6}{2 + 1 + 2}$$

$$V_R = \frac{20}{5} = 4$$

【直流回路】11.ミルマンの定理



例題2



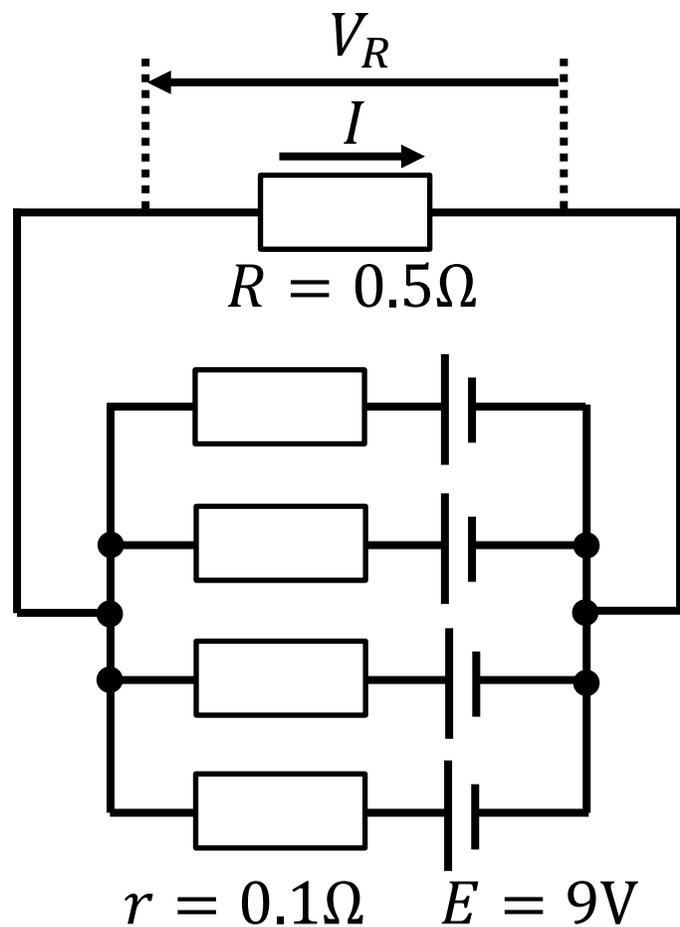
$$V_{ab} = \frac{\frac{15}{3} + \frac{22}{2} + \frac{0}{10}}{\frac{1}{3} + \frac{1}{2} + \frac{1}{10}}$$

$$V_R = \frac{150 + 330}{10 + 15 + 3}$$

$$V_R = \frac{480}{28} \doteq 17.14$$

【直流回路】11.ミルマンの定理

例題3 (H28 問5 改題)



$$V_R = \frac{\frac{9}{0.1} + \frac{9}{0.1} + \frac{9}{0.1} + \frac{9}{0.1} + \frac{0}{0.5}}{\frac{1}{0.1} + \frac{1}{0.1} + \frac{1}{0.1} + \frac{1}{0.1} + \frac{1}{0.5}}$$

$$V_R = \frac{360}{42}$$

$$V_R = \frac{60}{7}$$

$$I = \frac{V_R}{R} = \frac{\frac{60}{7}}{0.5} = \frac{120}{7} \approx 17.14$$

【直流回路】11.ミルマンの定理

- HW I_1, I_2, I_3 を求めよ。

