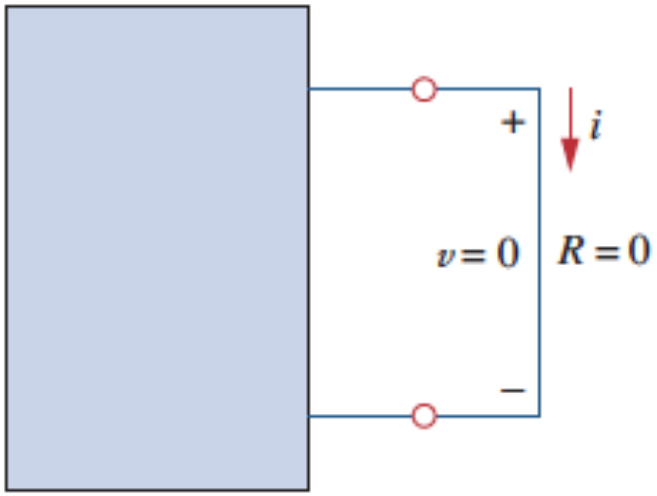
Lecture 7
Basics – 7 of 7

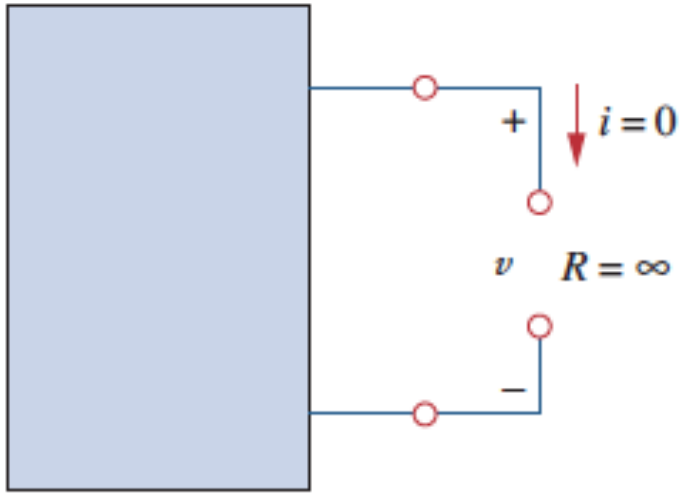
odds and ends

Special Cases

- Short circuit (R = 0)

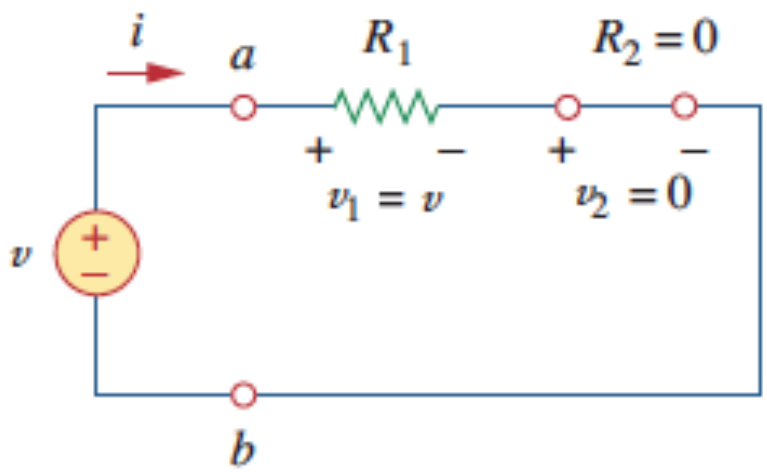


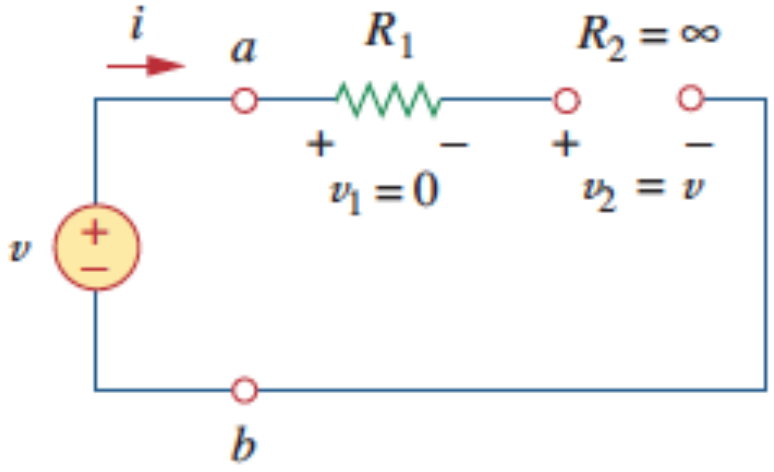
- Open circuit (R = infinity)



- Voltage division

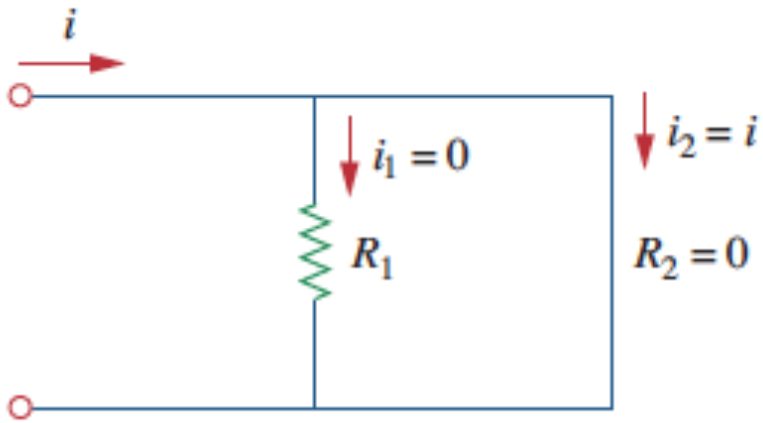
$$v_1 = \frac{R_1}{R_1 + R_2} v \qquad v_2 = \frac{R_2}{R_1 + R_2} v$$

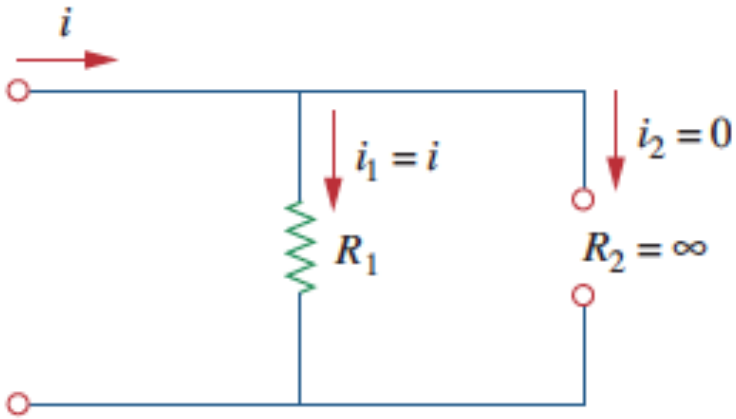




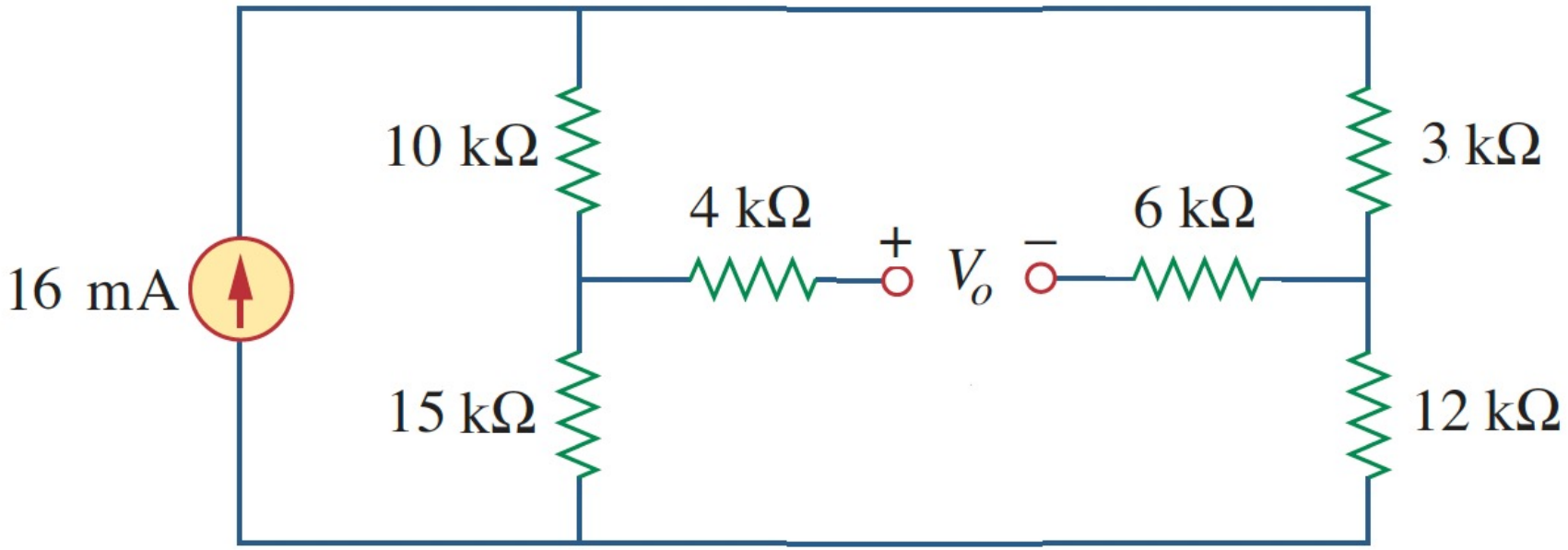
- Current division

$$i_1 = \frac{R_2}{R_1 + R_2} i \qquad i_2 = \frac{R_1}{R_1 + R_2} i$$

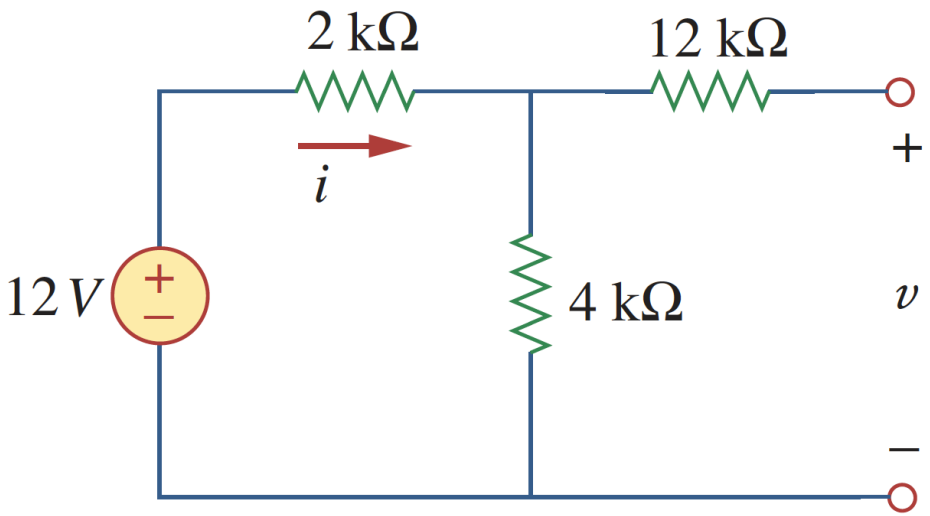




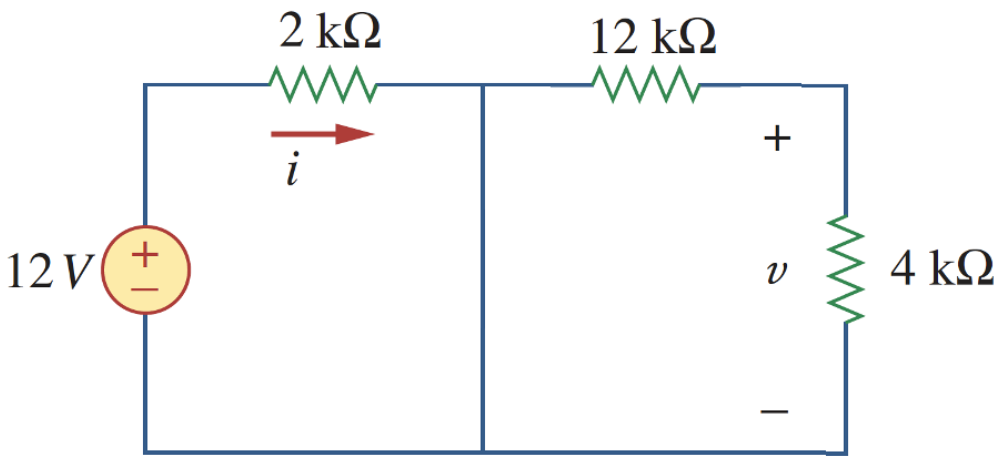
Example:



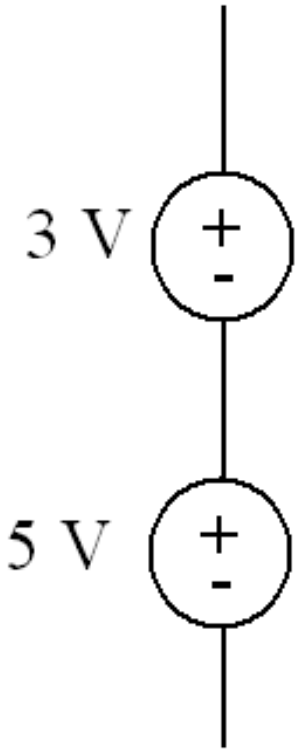
Example: find i and v

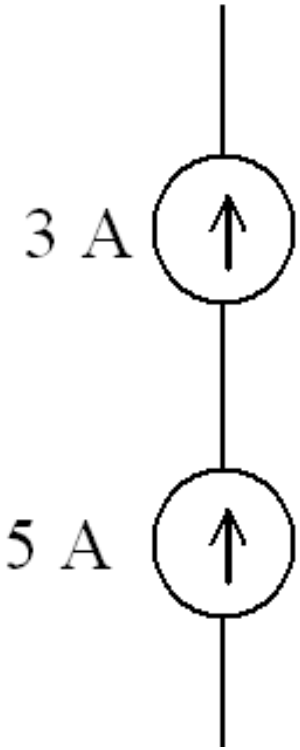


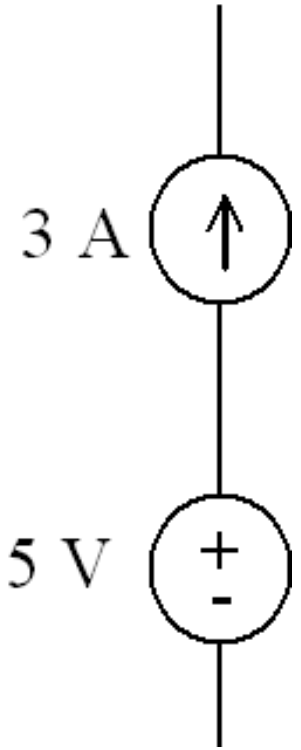
Example: find i and v



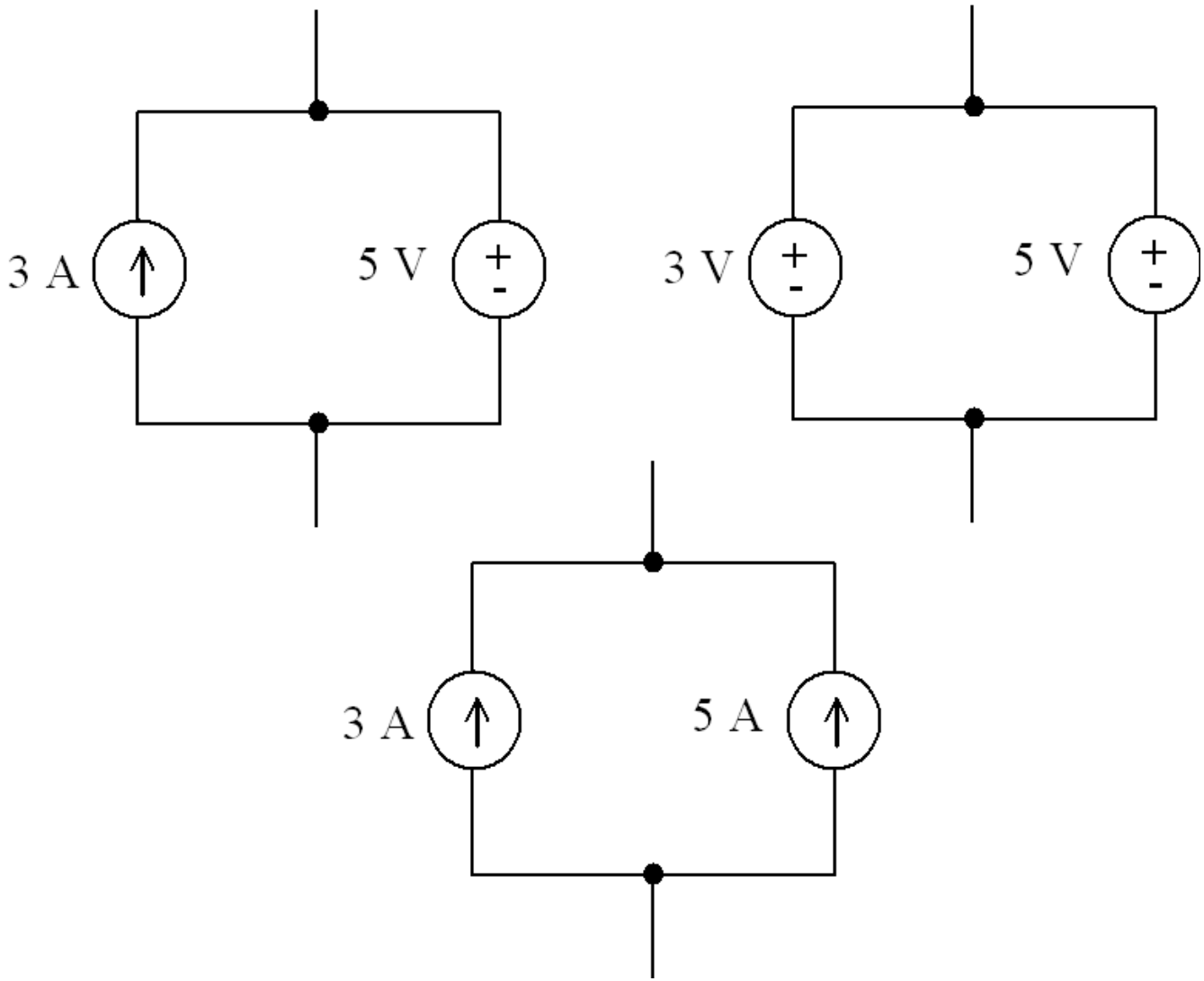
Do We Allow Series Sources?



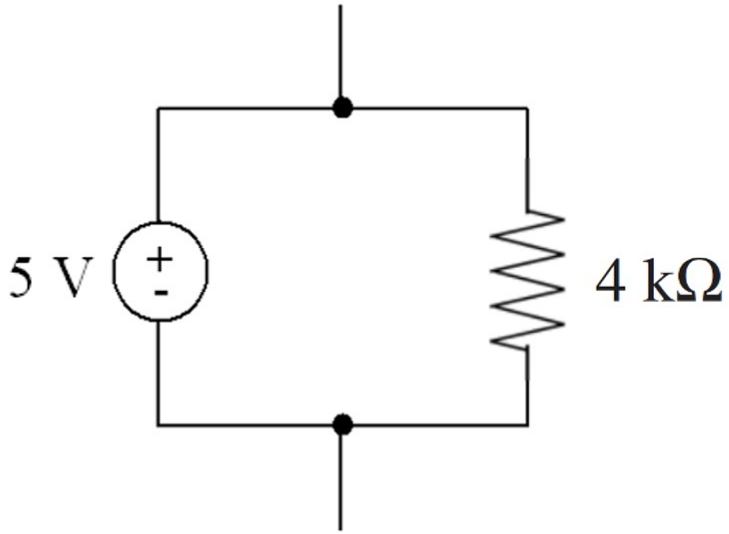


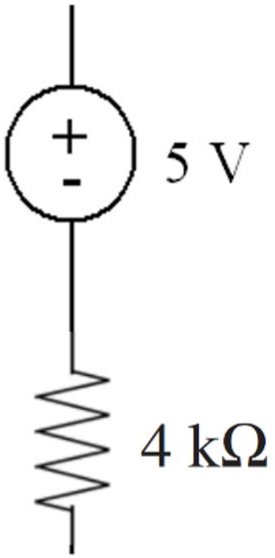


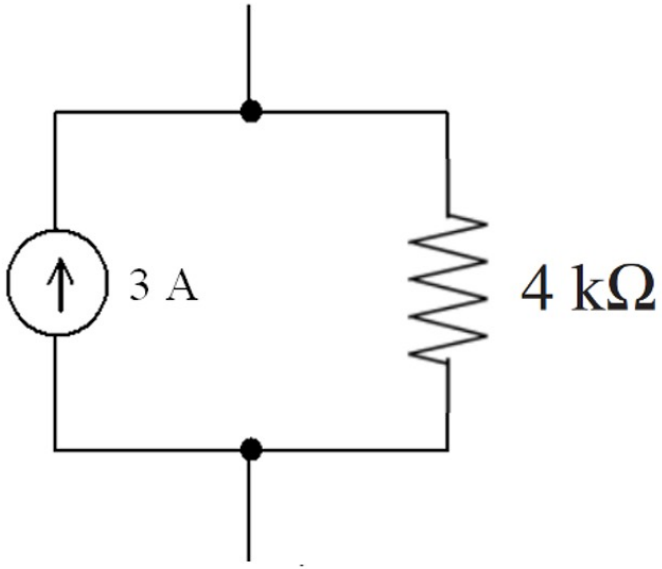
How about parallel sources?

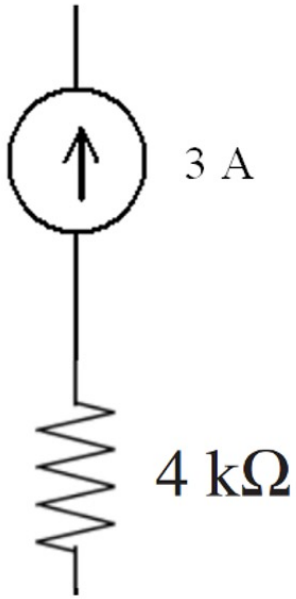


How about resistors and sources?

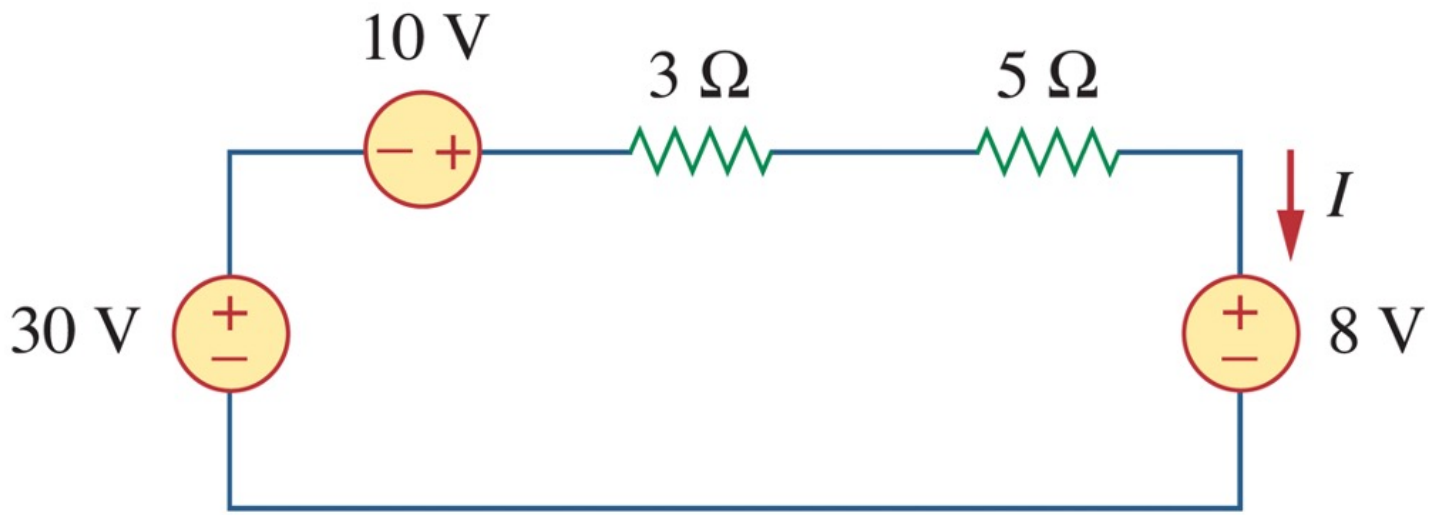




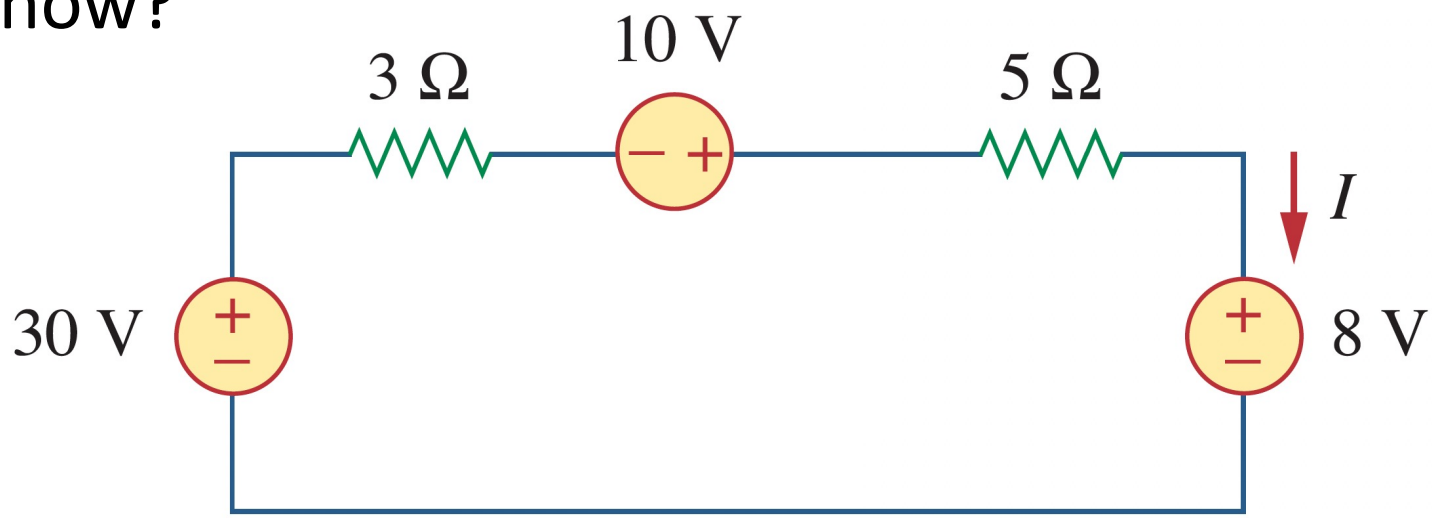

3 A
4 kΩ


3 A
4 kΩ

Example: find I

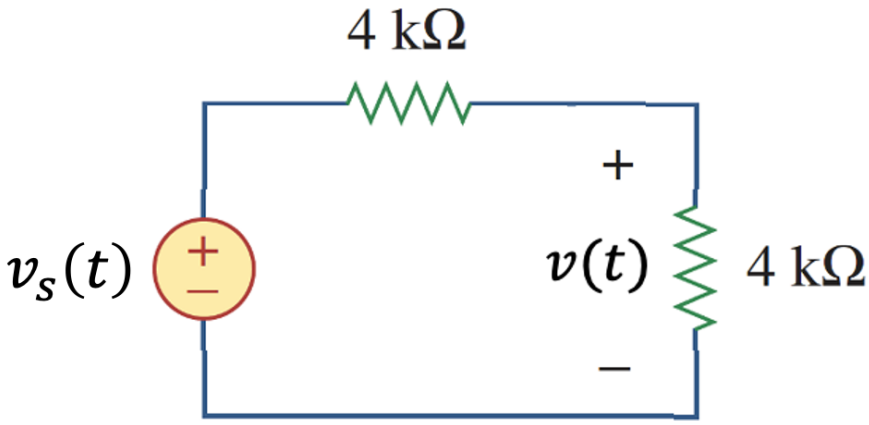


And now?



Time Varying Example

Consider this voltage division



- $v_s(t) = 12\ V$, then $v(t) = 6\ V$
- If $v_s(t)$, then ???