

Physics 102-Rec
 Quiz # 8 - Sect.24
 Chapter 27

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Name: _____

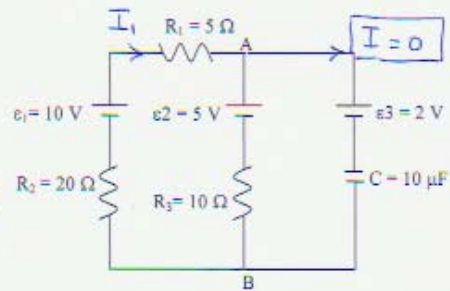
Key

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Consider the circuit shown in the figure.

- (a) After a **very long time (the capacitor is fully charged)**, calculate the potential difference $V_A - V_B$.

When the capacitor is fully charge, there is No current in that branch.



$$10 - 5I_1 - 5 - 10I_1 - 20I = 0$$

$$I_1 = \frac{5}{35} = 0.14 \text{ A}$$

$$V_A - V_B = 10I_1 + \epsilon_2 = 1.4 + 5 = \boxed{6.4 \text{ V}}$$

- (b) What is the potential difference across the capacitor in the same situation as part (a)?

$$V_C + \overset{2\text{V}}{\epsilon_2} = 6.4 \text{ V}$$

$$\Rightarrow \boxed{V_C = 4.4 \text{ V}}$$