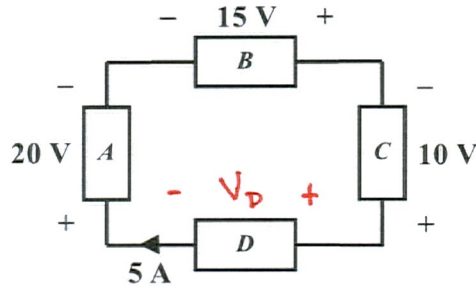


EE/EET 2240  
Homework Problem #04

For the circuit shown below:



- a. Does component *A* **absorb** power or **deliver** power? How do you know?

*A* absorbs power. The voltage (20V) and current (5A) satisfy the Passive Sign Convention.

- b. Does component *B* **absorb** power or **deliver** power? How do you know?

*B* delivers power. The voltage (15V) and current (5A) do not satisfy the Passive Sign Convention.

- c. Does component *C* **absorb** power or **deliver** power? How do you know?

*C* delivers power. The voltage (10V) and current (5A) do not satisfy the Passive Sign Convention.

- d. Does component *D* **absorb** power or **deliver** power? How do you know?

$$V_D = 10V + 15V - 20V = 5V.$$

*D* absorbs power. The voltage ( $V_D = 5V$ ) and current (5A) satisfy the Passive Sign Convention.

- e. Show that power is conserved.

$$P_{\text{absorbed}} = P_A + P_D = (20V)(5A) + (5V)(5A) = 125W$$

$$P_{\text{delivered}} = P_B + P_C = (15V)(5A) + (10V)(5A) = 125W$$

$$P_{\text{absorbed}} = P_{\text{delivered}} \Rightarrow \text{power is conserved}$$