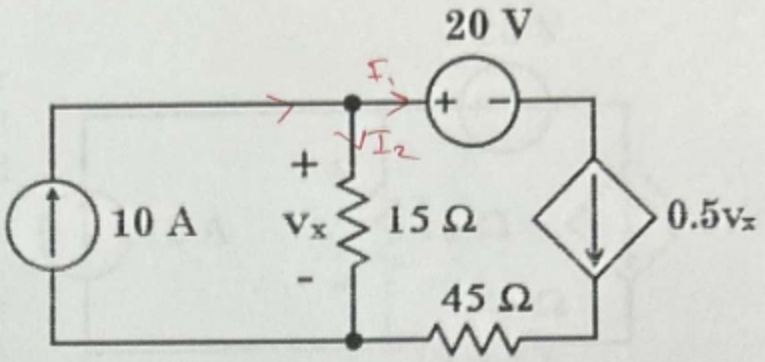
For the following circuit, calculate the power supplied or absorbed by the 10A current source, 20V voltage source and the 15ohm resistor.



Key Solution 8

KCL :

$$10\,A = I_1 + I_2$$

$$10\,A = \frac{V_x}{2} + \frac{V_x}{15}$$

$$10 = \frac{17}{30} V_x$$

$$V_x = \frac{300}{17} = 17.647 \text{ Volt}$$

① $P_{10A} = -V_x I = -17.647 * 10 = -176.47$ Watt Supplied

② $P_{20V} = I_1 V = (0.5 V_x) V = 0.5 \times 17.647 \times 20$

$= 176.47$ Watt Abs.

③ $P_{15} = \frac{V_x^2}{15} = \frac{(17.647)^2}{15} = 20.76$ watt Abs.