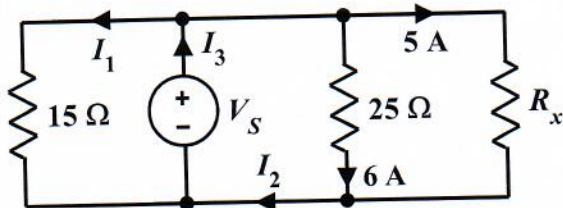


EE/EET 2240  
**Homework Problem #006**

For the circuit shown below:



a. Determine the value of  $V_s$ .

$$V_s = (25\Omega)(6A) = 150V$$

b. Determine the value of  $I_1$ .

$$I_1 = V_s / 15\Omega = 150V / 15\Omega = 10A$$

c. Determine the value of  $I_2$ .

$$I_2 = 6A + 5A = 11A$$

d. Determine the value of  $I_3$ .

$$I_3 = I_1 + 5A + 6A = 21A$$

e. Determine the value of  $R_x$ .

$$R_x = \frac{V_s}{5A} = \frac{150V}{5A} = 30\Omega$$

f. How much power does the  $15\Omega$  resistor absorb?

$$P_{15\Omega} = \frac{V_s^2}{15\Omega} = \frac{(150V)^2}{15\Omega} = 1500W$$

g. How much power does the  $25\Omega$  resistor absorb?

$$P_{25\Omega} = (6A)^2 (25\Omega) = 900W$$

h. How much power does  $R_x$  absorb?

$$P_x = (5A)^2 R_x = 750W$$

i. How much power does the independent voltage source deliver?

$$P_s = V_s I_3 = (150V)(21A) = 3150W$$

j. Verify that power is conserved.

$$P_s - P_{15\Omega} - P_{25\Omega} - P_x = (3150W) - (1500W) - (900W) - (750W) \\ = 0$$