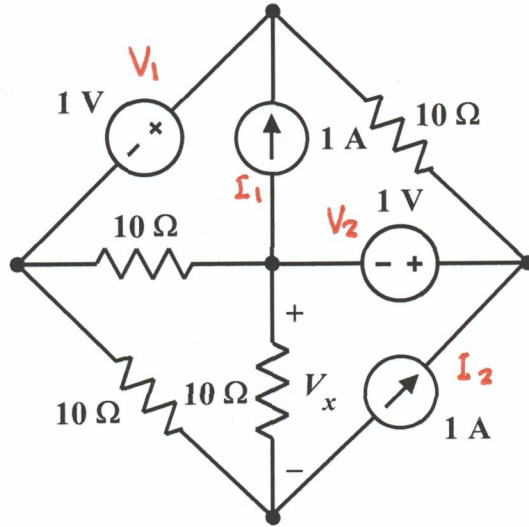
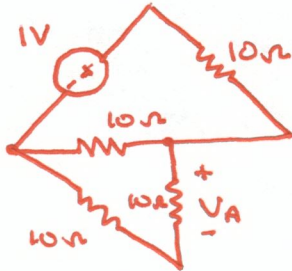


EE 2240  
**Problem #05**

Use the superposition method to determine the value of  $V_x$ .



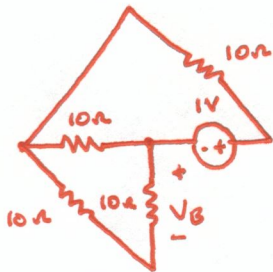
for  $V_1$ :



$$10\Omega \parallel 20\Omega = \frac{20}{3}\Omega$$

$$V_A = \frac{1}{2} \cdot \frac{\frac{20}{3}}{10 + \frac{20}{3}} \cdot 1V = 0.2V$$

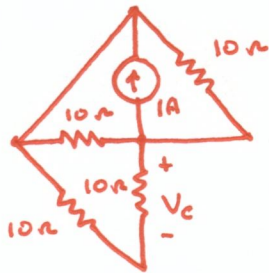
for  $V_2$ :



$$10\Omega \parallel 20\Omega = \frac{20}{3}\Omega$$

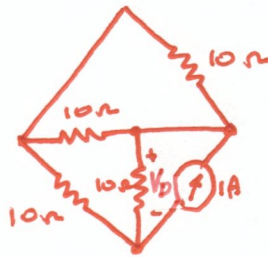
$$V_B = -\frac{1}{2} \cdot \frac{\frac{20}{3}}{10 + \frac{20}{3}} \cdot 1V = -0.2V$$

For  $I_1$ :



$$V_c = -10\Omega \cdot \frac{\frac{1}{20}}{\frac{1}{20} + \frac{1}{10} + \frac{1}{10}} \cdot 1A = -2V$$

For  $I_2$ :



$$10\Omega \parallel 10\Omega = 5\Omega$$

$$V_D = 10\Omega \cdot \frac{15}{10+15} \cdot 1A = 6V$$

$$V_x = V_A + V_B + V_C + V_D$$

$$= 0.2 - 0.2 - 2 + 6$$

$$= 4V$$