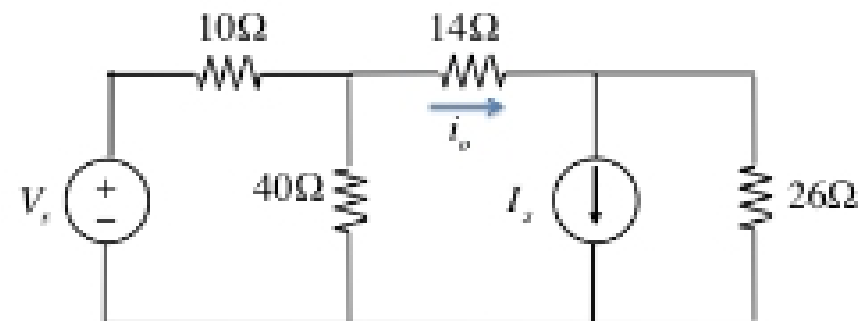


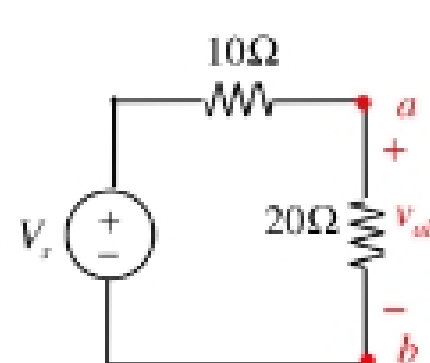
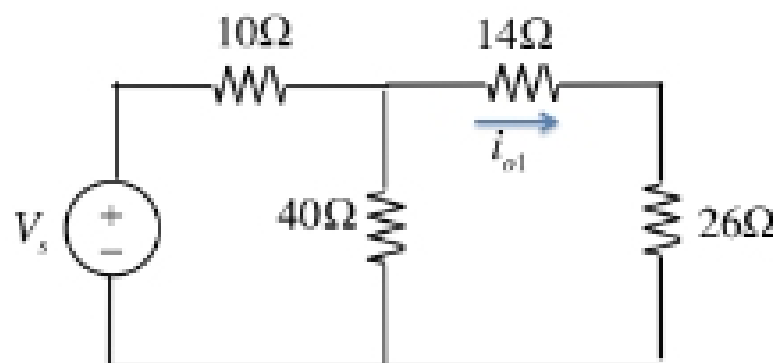
Last Name: _____

First Name: _____

Use superposition principle to find the current i_o in terms of voltage source V_s and the current source I_s .



Contribution of the voltage source



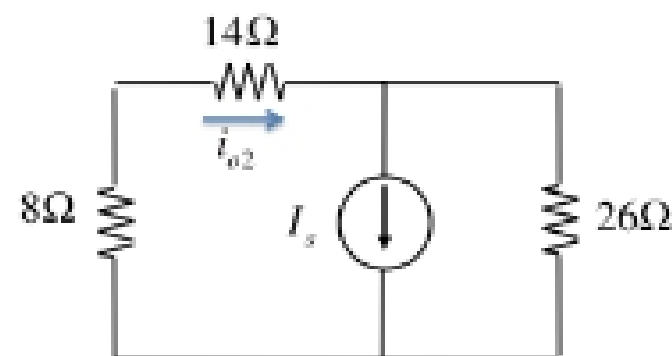
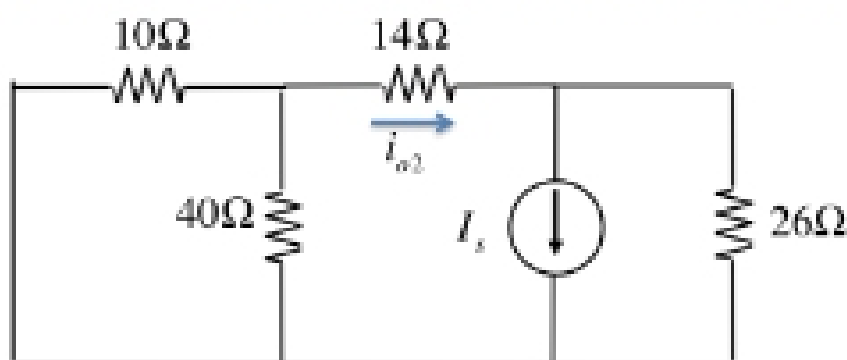
$$v_{ab} = V_s \left(\frac{20}{10+20} \right) = V_s \left(\frac{2}{3} \right)$$

$$i_{o1} = \left(\frac{v_{ab}}{40} \right)$$

$$i_{o1} = V_s \left(\frac{2}{3} \right) \left(\frac{1}{40} \right)$$

$$i_{o1} = V_s \left(\frac{1}{60} \right)$$

Contribution of the current source



$$i_{o2} = I_s \left(\frac{26}{26+22} \right)$$

$$i_{o2} = I_s \left(\frac{26}{48} \right) = I_s \left(\frac{13}{24} \right)$$

$$i_o = i_{o1} + i_{o2}$$

$$i_o = V_s \left(\frac{1}{60} \right) + I_s \left(\frac{13}{24} \right)$$

$$i_o = V_s (0.0167) + I_s (0.54)$$