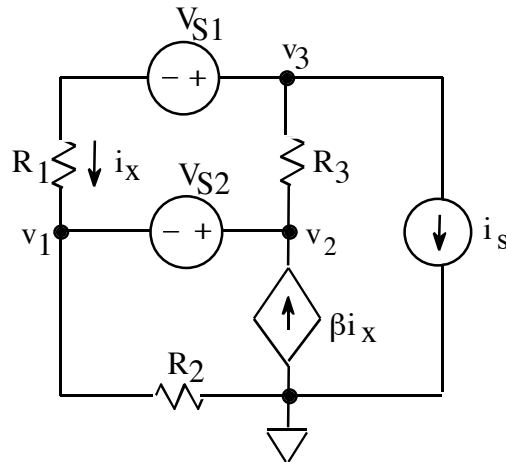


1. (a) (10 points)

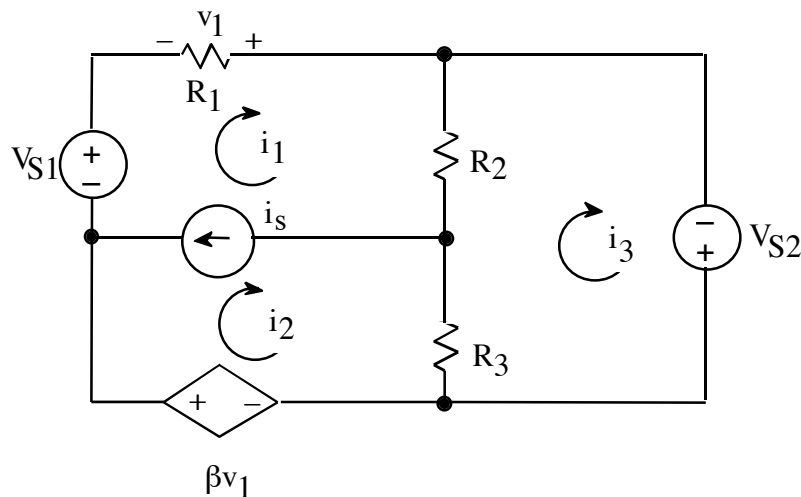


For the circuit shown, write three independent equations for the node voltages v_1 , v_2 , and v_3 . The quantity i_x must not appear in the equations.

- (b) (10 points)

Make a consistency check on your equations by setting one or more resistor values to 0 or ∞ and setting other sources and resistor to values for which v_1 , v_2 , and v_3 are obvious.

- (c) (10 points)

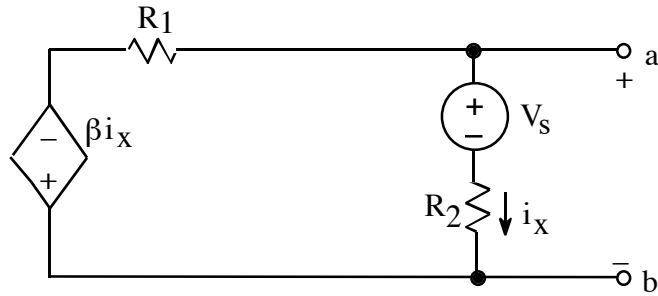


For the circuit shown, write three independent equations for the three mesh currents i_1 , i_2 , and i_3 . The quantity v_1 must not appear in the equations.

- (d) (10 points)

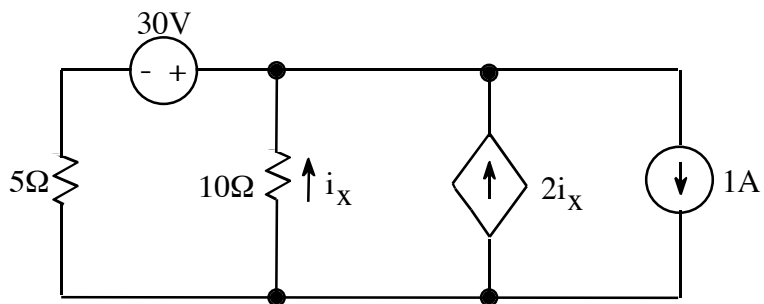
Make a consistency check on your equations by setting one or more sources to zero and using convenient resistor and source values.

2. (30 points)



Find the Thevenin's equivalent circuit at terminals a-b. Hint: Use node voltage method to find v_{th} .

3. (30 points)



Calculate the power furnished or absorbed by the 30V voltage source, and state whether it is furnished or absorbed.