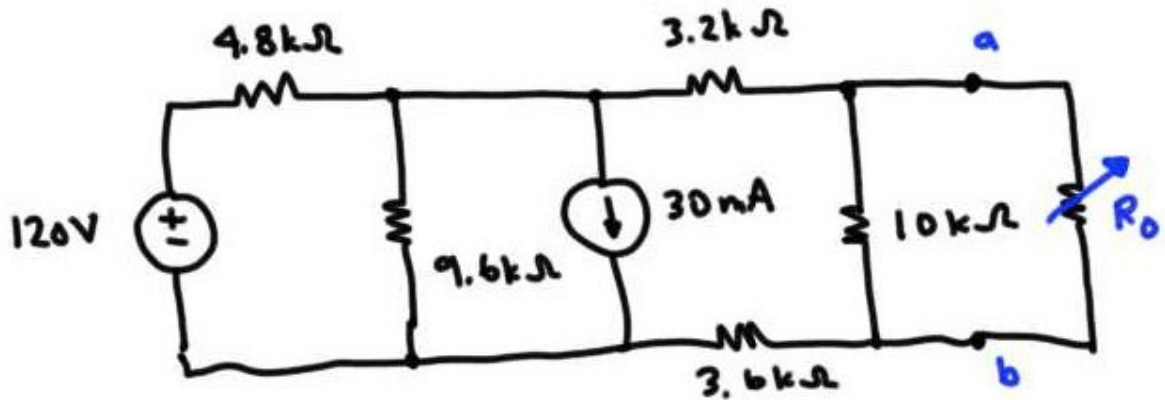**Maximum Power Transfer:** Given a linear network, the maximum power is delivered to a load resistor only if the load resistance matches the Thevenin resistance of the linear network.

1) The variable resistor is adjusted for maximum power transfer to R_0.

a) Find the value of R_0.
b) Find the maximum power that can be delivered to R_0.

2) The variable resistor has been adjusted until it absorbs the maximum power from the circuit shown below.
a) Find the value of R_0.
b) Find the maximum power that can be delivered to R_0.
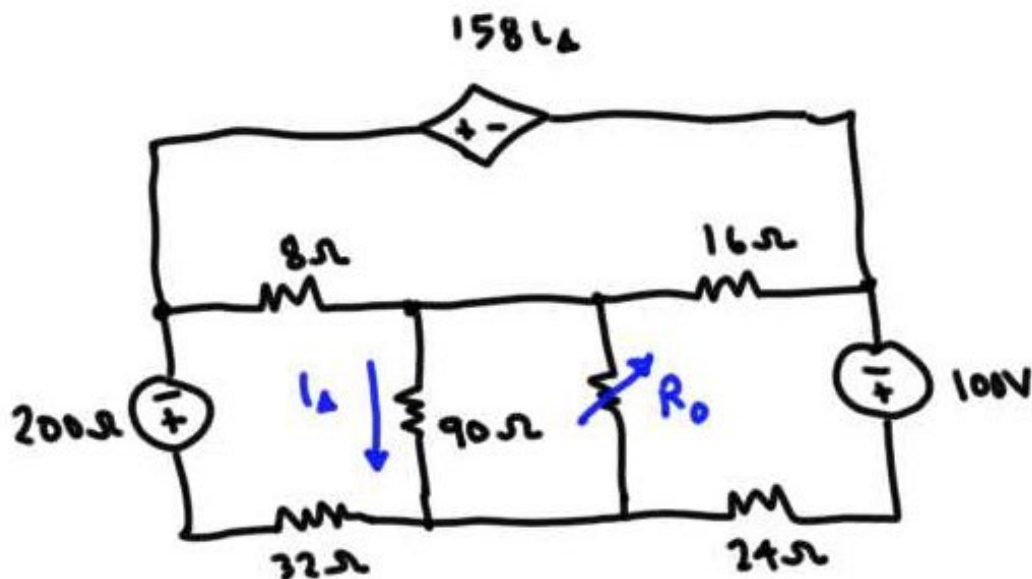
Superposition: Given a linear network, any circuit voltage or current can be calculated as the algebraic sum of the individual voltages or currents caused by each independent source acting alone.

1) Use the principle of superposition to find the voltage v_0 in the circuit. Also find the power dissipated in the 20Ω resistor.
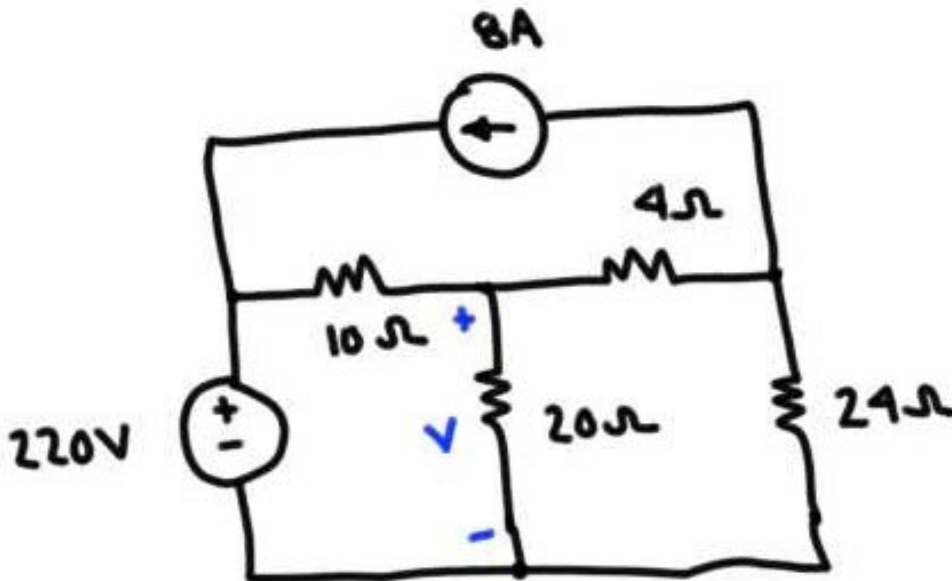
2) Use superposition to find v_0 and i_0 in the circuit shown below.