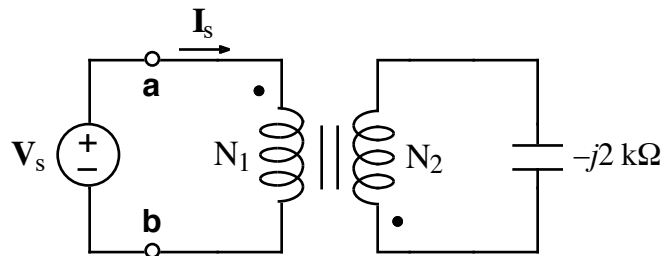


4.



Given $N_1/N_2 = 7$, calculate the equivalent impedance, $z_{eq} = \mathbf{V}_s/\mathbf{I}_s$, to the right of the **a** and **b** terminals in the above transformer circuit. Note: the transformer is ideal.

SOL'N: The equivalent impedance of the circuit to the right of the **a** and **b** terminals is the reflected impedance given by the square of turns ratio times the secondary load impedance:

$$z_r = \left(\frac{N_1}{N_2}\right)^2 z_L = 7^2(-j2 \text{ k}\Omega) = -j98 \text{ k}\Omega$$

NOTE: Since the primary and secondary are isolated from one another, we could redraw the secondary side right side up without changing the circuit behavior.