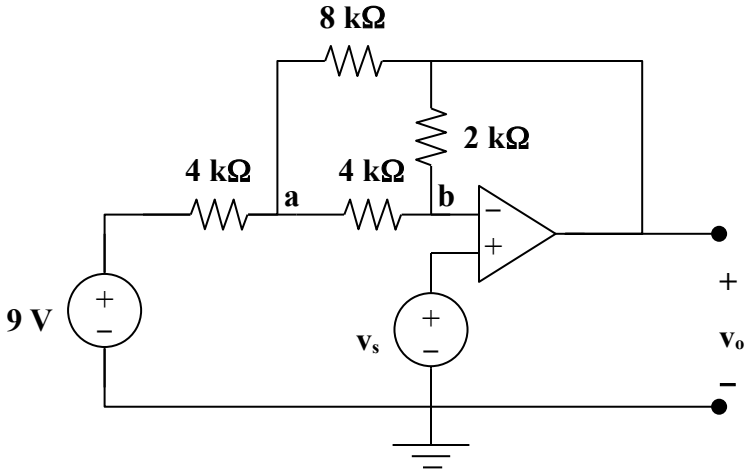
Chapter 5, Solution 20.



At node a,

$$\frac{9 - v_a}{4} = \frac{v_a - v_o}{8} + \frac{v_a - v_b}{4} \longrightarrow 18 = 5v_a - v_o - 2v_b \qquad (1)$$

At node b,

$$\frac{v_a - v_b}{4} = \frac{v_b - v_o}{2} \longrightarrow v_a = 3v_b - 2v_o \qquad (2)$$

But $v_b = v_s = 2$ V; (2) becomes $v_a = 6 - 2v_o$ and (1) becomes

$$-18 = 30 - 10v_o - v_o - 4 \qquad v_o = -44/(-11) = \mathbf{4\ V}.$$