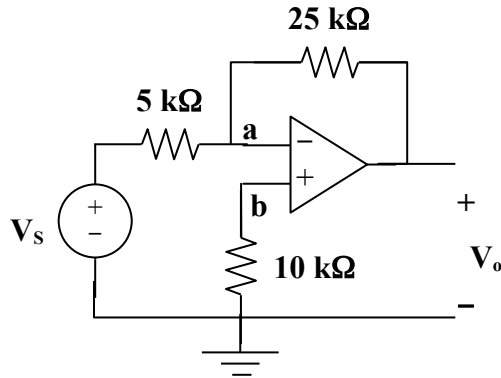


### Chapter 5, Solution 12.

Step 1. Label the unknown nodes in the op amp circuit. Next we write the node equations and then apply the constraint,  $V_a = V_b$ . Finally, solve for  $V_o$  in terms of  $V_s$ .



Step 2.  $[(V_a - V_s)/5k] + [(V_a - V_o)/25k] + 0 = 0$  and

$[(V_b - 0)/10k] + 0 = 0$  or  $V_b = 0 = V_a$ ! Thus,

$[(-V_s)/5k] + [(-V_o)/25k] = 0$  or,

$$V_o = (-25/5)V_s \text{ or } V_o/V_s = -5.$$