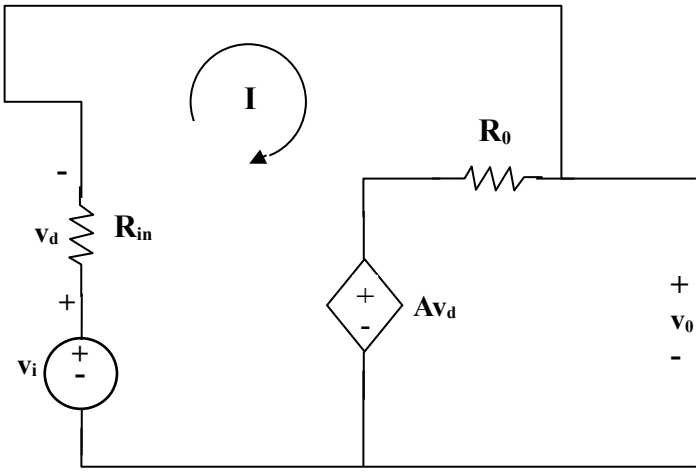
Chapter 5, Solution 5.



$$-v_i + Av_d + (R_i + R_0)\, I = 0 \qquad (1)$$

But $v_d = R_i I$,

$$-v_i + (R_i + R_0 + R_i A)\, I = 0$$

$$I = \frac{v_i}{R_0 + (1 + A)R_i} \qquad (2)$$

$$-Av_d - R_0 I + v_0 = 0$$

$$v_0 = Av_d + R_0 I = (R_0 + R_i A)I = \frac{(R_0 + R_i A)v_i}{R_0 + (1 + A)R_i}$$

$$\frac{v_0}{v_i} = \frac{R_0 + R_i A}{R_0 + (1 + A)R_i} = \frac{100 + 10^4 \text{x} 10^5}{100 + (1 + 10^5)} \cdot 10^4$$

$$\cong \frac{10^9}{\left(1 + 10^5\right)} \cdot 10^4 = \frac{100{,}000}{100{,}001} = \mathbf{0.9999990}$$