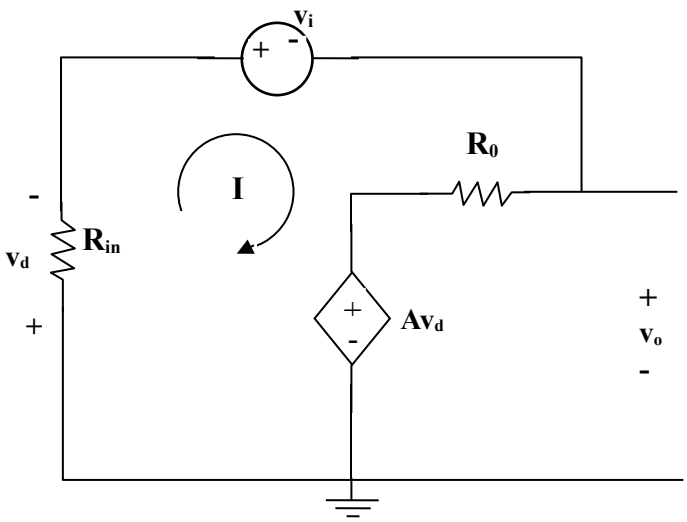
Chapter 5, Solution 6.



$$(R_0 + R_i)R + v_i + Av_d = 0$$

But $v_d = R_iI$,

$$v_i + (R_0 + R_i + R_iA)I = 0$$

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

$$-Av_d - R_0I + v_o = 0$$

$$v_o = Av_d + R_0I = (R_0 + R_iA)I$$

Substituting for I in (1),

$$v_0 = -\left(\frac{R_0 + R_iA}{R_0 + (1+A)R_i}\right)v_i$$

$$= -\frac{\left(50 + 2x10^6 x 2x10^5\right)\cdot 10^{-3}}{50 + \left(1 + 2x10^5\right)x2x10^6}$$

$$\cong \frac{-200{,}000x2x10^6}{200{,}001x2x10^6}\,mV$$

$$v_0 = \mathbf{-0.999995\ mV}$$