Problem 1 (10 points) For the following current source, solve for the listed parameters given: $W_1 = 0.2 \, \mu m$, $W_2 = 0.8 \, \mu m$, $L_1 = L_2 = 0.1 \, \mu m$, $V_{T,n} = 0.8 \, V$, $\mu_nC_{ox} = 400 \, \mu A/V^2$, $\lambda = 0.01 \, V^{-1}$, $\gamma = 0$. Show all work to receive full credit and clearly state any simplifying assumptions you make.

\[ V_{DD} = 2.5V \]
\[ I_{IN} = 200 \, \mu A \]

\[ V_{IN} = \]
\[ I_O \, (at \, V_O = 2.0 \, V) = \]
\[ V_{O,MIN} = \]

Systematic Gain Error \((at \, V_O = V_{O,MIN}) = \)