Homework Assignment No. 6

Due on Wednesday, February 19, 2003

1.) A PMOS common-drain amplifier is shown. Assume the parameters of the
transistor are \( k_F = 0.5 \text{mA/V}^2 \), \( V_{TP} = -1 \text{V} \), and
\( \lambda = 0 \). (a.) If \( I_{SD} = 0.5 \text{mA} \), find the small
signal model parameter values for \( g_m \) and \( r_o \).
(b.) Find an algebraic expression for the small
signal input resistance, \( R_{in} \), the output
resistance, \( R_{out} \), and the voltage gain, \( v_{out}/v_{in} \).
(c.) Numerically evaluate the small signal
input resistance, \( R_{in} \), the output resistance, \( R_{out} \), and the voltage gain, \( v_{out}/v_{in} \).

2.) Problem 14.13 of the text.

3.) Problem 14.15 of the text.

4.) Problem 14.21 of the text.

5.) Problem 14.23 of the text