

Consider the amplifier shown below, where the MOSFET has  $g_m = 5 \text{ mA/V}$ ,  $\lambda = 0.01 \text{ V}^{-1}$ ,  $C_{gs} = 2 \text{ pF}$ , and  $C_{gd} = 0.5 \text{ pF}$ .

- Determine the amplifier's input resistance  $R_{in}$  and the output resistance  $R_{out}$ . (0.75 points)
- Determine the amplifier's midband amplifier voltage gain  $A_V = v_o / v_i$ , and midband signal source voltage gain  $G_V = v_o / v_s$ . (0.75 points)
- Determine a good approximate value for the lower -3 dB frequency,  $f_L$ . (1 point)
- Determine a good approximate value for the upper -3 dB frequency,  $f_H$ . (1.5 point)

