Selected Answers to HW #9

Remember to include intermediate calculations and explain all answers in your solutions. You will not receive credit for merely repeating an answer given here.

If an answer is not provided below, it is either because the solution is trivial or because disclosure of the answer would reveal too much of the solution.

It is possible that one or more of the answers given below is incorrect because of the rush to post them. If you suspect that an answer is incorrect, please let me know as soon as possible.

1. $I_D = 500\ \mu\text{A}$; $g_m = 10\ \text{mA/V}$

2. $A_v = \dfrac{v_o}{v_{in}} = \dfrac{g_m\left(R_S\,\|R_L\|r_o\right)}{1 + g_m\left(R_S\,\|R_L\|r_o\right)}$; $A_v = 0.99$ V/V w/r_o included

3. $R_S = 1.2\ \text{k}\Omega$; $R_D = 2.0\ \text{k}\Omega$

4.   a. $i_{D\text{pk}} = 23\ \mu\text{A}$
        b. $V_{IL} = 0.59$ V; $V_{IH} = 0.71$ V

5.   [proof]