1. Dimension b is usually referred to as:

2. Dimension a is made as small as possible to increase:

3. In an N channel enhancement mode MOSFET, region d is:

4. What regions are heavily doped n+ to form ohmic contacts?

5. Indicate on the drawing above the Source, Drain and Gate, and draw an arrow showing where the inversion layer pinches off when Drain voltage is above threshold.

6. Draw the schematic of a CMOS inverter, indicating input, output, Vdd, ground. Write a few sentences describing how it works.
On the plot to the right, label the horizontal and vertical axis. Indicate the triode and square law regions. The square law region of second curve up from the bottom is a drain current of 2 mA, at \((V_{gs} - V_{tn}) = 1\) volt. What is \((V_{gs} - V_{tn})\) for the top curve? Fill in approximate values for \((V_{gs} - V_{tn})\) for the other two curves. The maximum \(V_{ds}\) is 10 volts.

Draw a load line on the above curve representing the resistor in the circuit below. Assume that \(V_{tn} = 1.2\) volts. Using the load line, estimate the value of \(V_{gs}\) needed for \(V_{ds}\) in the circuit to equal 4 volts. Show your work.