

**Special Problem 4.10-1**

A symmetric CMOS inverter has the following parameters:

$$V_{DD} = 5.0 \text{ V}$$

$$K = 0.5 \text{ mA/V}^2$$

$$V_T = 1.0 \text{ V}$$

The inverter output is first connected to an **open circuit**.

A. Determine the value of the **largest input voltage** that will result in an **output voltage** that is considered to be unambiguously a **high output state**.

B. Determine the **operating mode** (i.e., cutoff, saturation, triode) and **drain current** of the **PMOS transistor** if the input voltage is  $v_I = 2.5$ .