

Special Problem 1.7-3

Homer has made a **new** type of **digital inverter** (i.e., it's **not CMOS!**).

The digital logic uses the standard convention where **0 V** is a **low** state (i.e., a "0") and **5 V** is a **high** state (i.e., a "1").

Homer's digital inverter has the **transfer function**:

$$v_O = \begin{cases} 4.5 - 0.5(v_I)^2 & \text{for } 0 \leq v_I \leq 2.0 \\ \frac{2.5}{9}(5 - v_I)^2 & \text{for } 2.0 \leq v_I \leq 5.0 \end{cases} \quad [V]$$

Determine for Homer's inverter:

1. V_{OL} and V_{OH}
2. V_{IL} and V_{IH}
3. NM_L and NM_H