

### Special Problem 3.3-25

Homer has constructed a **Piece-Wise Linear model** to approximate the behavior of some junction diode.

Homer constructed his model by simply **guessing** the values of model elements  $V_{D0}$  and  $r_D$ . In other words, he used **no specific criteria** for selecting these values.

However, we know that Homer's **model** predicts a diode current of:

$$i_D(t) = 30.0 + 2.0 \cos \omega t \quad mA$$

when voltage:

$$v_D(t) = 0.75 + 0.01 \cos \omega t \quad V$$

is placed across it.

Determine the values  $V_{D0}$  and  $r_D$  of Homer's model