Special Problem 3.3-23

Homer has constructed a **Piece-Wise Linear model** to approximate the behavior of a certain junction diode (i.e., Homer has determined the values of model parameters V_{D0} and r_D).

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:

$$i_D(t) = 6.0 + 2.0 \cos \omega t \quad \text{mA}$$

when a diode voltage of:

$$v_D(t) = 0.7 + 0.02 \cos \omega t \quad V$$

is placed across it.

Determine the **numeric values** of V_{D0} and r_D in Homer's model.