

**Special Problem 3.3-4**

A junction diode has  $I_s = 5 \times 10^{-9} \text{ A}$  and  $n = 2$ . For a small-signal application, find a piecewise-linear model ( $V_{D0}$  and  $r_d$ ) which matches the behavior of the diode in a small region around a diode bias voltage of  $V_D = 0.725 \text{ V}$ .