Special Problem 3.2-3

The circuit below contains two pn junction diodes.

The two junction diodes are identical.

The ideality factor for both diodes is $n = 1.0423$, and the scale current is $I_s = 10^{-13}$.

The voltage across the 2K resistor is 2 volts.

Without using diode models (i.e., use junction diode equations), find the value of resistor $R$.