Approximate \( \int_0^1 e^{\sin x} \, dx \) using the Trapezoidal Rule with \( n = 4 \) rounding to 5 decimal places. 

With \( n = 4 \), then \( \Delta x = \frac{b-a}{n} = \frac{1-0}{4} = \frac{1}{4} \). Enter \( e^{\sin x} \) as \( y_1 \). We will now have the following partition:

\[
\begin{array}{cccc}
0 & \frac{1}{4} & \frac{1}{2} & \frac{3}{4} & 1 \\
x_0 & x_1 & x_2 & x_3 & x_4
\end{array}
\]

1) So we need to enter 0, \( \frac{1}{4} \), \( \frac{1}{2} \), \( \frac{3}{4} \), 1 as a list. We will go to the list menu, create the list and then store the list as \( x \).

\[\text{2nd} \quad \text{F1} \quad \text{data values} \quad \text{F2} \quad \text{STO} \quad \text{x-var} \quad \text{Enter}\]

2) Now we need evaluate the function using these \( x \)-values and store these function values as \( A \).

\[\text{2nd} \quad \text{alpha} \quad 0 \quad 1 \quad \text{Enter} \quad \text{STO} \quad \text{LOG} \quad \text{Enter}\]

So now we have all the values for \( f(x_i) \) stored as \( A \). Now create a list for the coefficients, and we will store this list as \( M \).

3) We need to enter 1, 2, 2, 2, 1 as a list.

\[\text{2nd} \quad \text{F1} \quad \text{data values} \quad \text{F2} \quad \text{STO} \quad 8 \quad \text{Enter}\]

4) Next, we need to multiply the function values in \( A \) times the coefficients in the list stored as \( M \). Then store this product, \( f(x_i) \ast M \), as \( B \).

\[\text{Alpha} \quad \text{LOG} \quad \text{X} \quad \text{Alpha} \quad 8 \quad \text{STO} \quad \text{Sin} \quad \text{Enter}\]

5) Now we need the sum of the values in the list \( B \).

\[\text{2nd} \quad \text{X} \quad \text{F5} \quad \text{F1} \quad (\quad \text{Alpha} \quad \text{Sin} \quad ) \quad \text{Enter}\]

This gives a sum of 13.06569, so \( \int_0^1 e^{\sin x} \, dx \approx \frac{1}{8}(13.06569) = 1.63321 \).