

MATH 1351 TI-85 EXERCISE XII
The TI-85 and Riemann Sums

Name: _____ SID: _____

Let's estimate the areas under the graphs of some positive functions, above the x-axis, and between some x-values, say **a** and **b**. We'll do it by drawing rectangles called *right boxes*, whose right edge, hence height, is determined by the graph, and bases are the same lengths, *delta-x*.

1. Use two such boxes (computing by hand) to approximate the area under the graph of $y = 1/x$, from $x = 1$ to $x = 3$. In fraction form the approximate is _____
2. Repeat the exercise using 3 boxes. In fraction form the approximate is _____
3. Repeat the exercise using 4 boxes. In fraction form the approximate is _____

Find the TI-85 command **seq** by choosing **2nd MATH** from the keyboard, then **MISC** from the screen menu. Enter the following command sequence onto the screen

seq((2/2)(1/(1+I(2/2))), I, 1, 2, 1)

Press **ENTER** and then convert the answer to fraction form. You should see the terms summed in problem 1. From the same place you found **seq** find **sum**. Choosing **sum 2nd ANS** should sum the sequence found above and yield the same result as in number 1. Does it? _____

Now use the TI to repeat numbers 2 and 3 above. The general syntax is

seq(*delta-x* f(a + I *delta-x*), I, 1, N, 1) followed by **sum**

where **N** is the number of boxes and $\textit{delta-x} = (b - a) / N$.

4. Estimate the above area using 10 boxes. In fraction form the approximate is _____
5. Estimate the above area using 100 boxes. In fraction form the approximate is _____
Use 100 boxes to estimate each of the following areas:
6. The area under one positive loop of the graph of the sine curve. The approximation is _____
7. The area under $y = x^5$ from $x=0$ to $x=2$. The approximation is _____
8. The area of the finite region determined by the x-axis and the graph of $y = x^4 - 2x^2 + 1$.
The approximation is _____
9. The area under $y = e^{(x^2)}$ from $x = -1$ to $x = 1$. The approximation is _____
What would be the syntax if we were using *left boxes* instead of *right boxes* to approximate the area?