According to the Standards:

Instructional programs from preK-grade 12 should enable students to:
- Recognize and use connections among mathematical ideas
- Use the language of mathematics to express mathematical ideas precisely
- Select, apply and translate among mathematical representations to solve problems

In grades 9-12 students should
1. Students should develop an increased capacity to link mathematical ideas and a deeper understanding of how more than one approach to the same problem can lead to equivalent results.

Calculus Scope and Sequence: Applications of Definite Integrals

Keywords: average value

Description: This activity will use the definite integral to find the average value of a function. It will show it working the steps of the 2nd Fundamental Theorem, then will show the alternate approach of having the capabilities of the calculator work the entire problem at once

Find the average value of the function: $f(x) = \sqrt[3]{x}$ *on [0,1]*

The formula for the average value of a function is: $\dfrac{1}{b-a}\displaystyle\int_{a}^{b} f(x)dx$

We find the integral from the Homescreen in F3-Calc-#2 and it requires the following arguments: (function, variable)

User tips:
- **Store the function in one of the Y= slots, it allows easier access!**
- **(make sure you enclose the 1/3 in parentheses when you are typing it in, otherwise the TI-89 will follow the order of operations you gave it, which will NOT be what you want here)**
- **You can quickly store your result by going to the place on the Y=screen you want to be and press 2nd-Ans.**
- **You can also use the Copy-Paste commands found in F1-Tools**
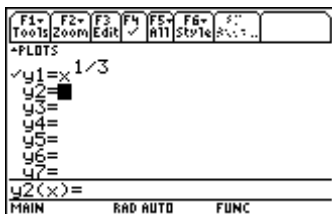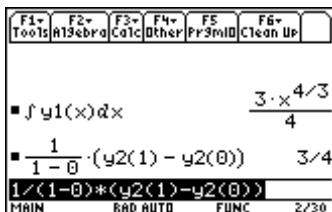
Now calculate the integral: Store it in y2
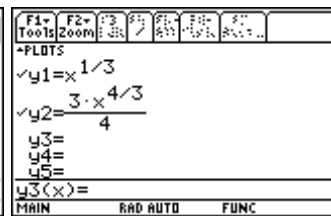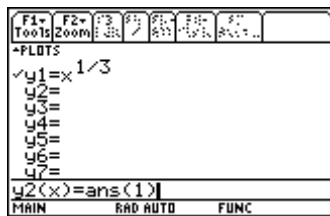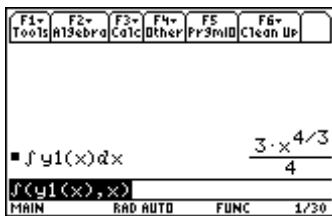
Now evaluate the rest of the formula:

Alternately, the TI-89 gives you the capability of doing the entire average value at once:

You can use the same integral command (F3-Calc-#2) as a definite integral by including in the syntax the boundaries:
(function, variable, lower bound, upper bound)