Evaluating an Integral with a Calculator

We are in the process of learning how to find the definite integral and use it to evaluate an integral, find the area under a curve, and do a host of other things. This is an important skill, but you also are expected to know how to evaluate a definite integral with your calculator. On the calculator-allowed section of the AP exam you will not have time, and maybe not the skill, to evaluate the integrals by hand. The exam is written with the assumption that you will use your calculators to get the answers to them.

The instructions in this lesson will directly refer to a TI-83+ but they are basically the same for any calculator. If you have a different calculator you will have to consult with a local math teacher or your manual to find out if the process is the same. It won't be much different, no matter what kind of calculator you use.

Let's look at how to evaluate this integral, $\int_{-1}^{2} x \sin x \, dx$, with the calculator:

a) Go to the MATH menu
b) Choose option #9 – the one that says fnInt (
c) Type in: function, x, lower limit, upper limit
With our example, it will look like this fnInt(x sin x, x, -1, 2
d) Press enter to get the answer. In our example, you should get 2.0427

Try the above example to make sure you can do it correctly. There are a few more examples on page 265, with answers provided, that you should practice as well.

For a **quick point of extra credit**, evaluate this integral with your calculator and then send me the answer in a Message with the heading "Integral". $\int_{1}^{5} 7x e^{x} dx$

**** Note: When you are evaluating an integral with the calculator you must use proper notation on your paper! Show the INT = answer**. Our example would look like $\int_{-1}^{2} x \sin x \, dx \approx 2.0427$. You **<u>cannot</u>** show the calculator-speak notation and get credit for it.
The AP readers want the integral written out in proper mathematical notation and set approximately equal to the answer.

Gets full credit: $\int_{-1}^{2} x \sin x \, dx \approx 2.0427$
Gets no credit: $fInt(x \sin x, x, -1, 2) \approx 2.0427$
Gets no credit: NINT = 2.0427

** for the EC above, you can just send me the answer (2.0247) so that you don't have to worry about showing the integral in proper notation.