

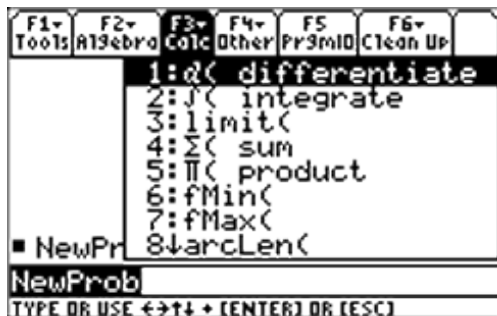
TI-89 Derivatives and Integrals

Objectives

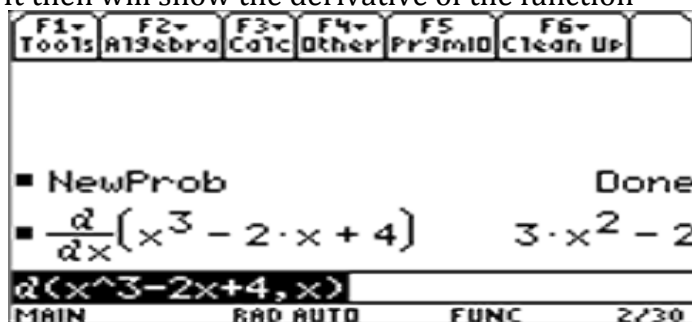
1. Learn how to take a derivative.
2. Learn how to take an integral.
3. Learn how to find the slope to the tangent line.
4. Learn how to find the area underneath a curve.

Objective #1- How to take a derivative

- After turning on the calculator, go to the [HOME] tab.
- Then to take a derivative you can access the differentiation function from [F3, CALC] at the top of the screen. Click on the tab. The screen should look like the picture below



- Then to differentiate click on [OPTION 1: d(differentiate]
- In the box area it should be [d(]
- Enter in the function [x^3-2x+1, x] so it look like what is represented below
- Once entered, Click [ENTER]
- It then will show the derivative of the function

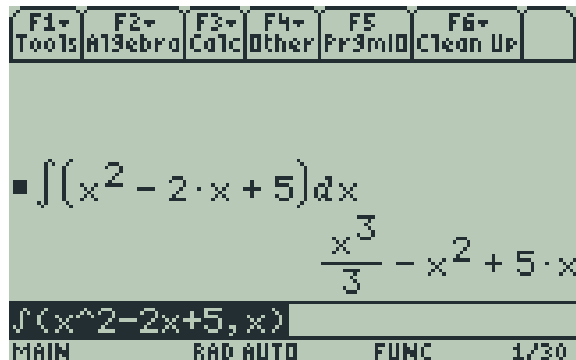


Objective #2- How to Take an Integral

- From the home page press [F3] and then navigate to 2:Integrate



- Press [ENTER] to paste the integral symbol. Then type the equation “ $x^2 - 2x + 5, x$ ”. Press [ENTER] to evaluate



- This will display the antiderivative of the function

Objective #3- How to Find the Slope of the Tangent Line

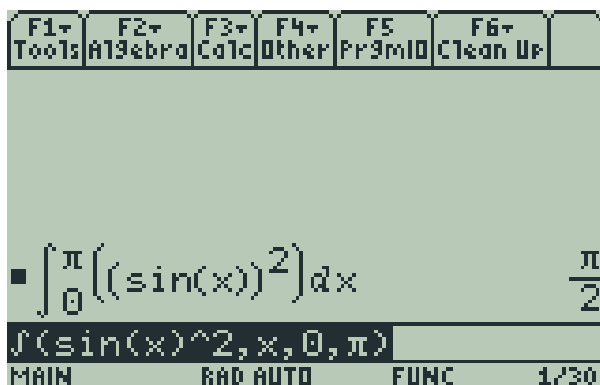
- First click on the tab [F3, CALC] and then choose option 1 [DIFFERENTIATE]
- Then enter into the box the function [$.4x^2 + 1, x$]
- Before click enter, after the x continue the equation by putting [$(.4x^2 + 1, x)$]
 $x=3$]

- Click [ENTER] and it will give a specific number which is the slope of the tangent line



Objective #4- How to Find Area Under a Curve (i.e. how to take a definite integral)

- To evaluate a definite integral, from the home screen press [F3] to access the calculus menu, and then navigate to 2: Integrate as before. Press [ENTER] to paste the integral symbol
- In the box enter in the equation $[\sin(x)^2, x, 0, \pi]$ in which the integral is bounded by 0 and 3.14
- Press [ENTER] and it will give an answer that is the area under the curve



Exercises

1. Find the derivative of the function $f(x) = (x+3)^2 + (x)(x+1)$
 - a. Find the slope of the tangent line to the same function in #1 when $x=1$.
 - b. Write the equation of the tangent line in point-slope form.

2. Find the integral of the function $f(x) = 3x^2 + 2x$
 - a. Find the area under the curve bounded by $x=0$ and $x=1$
 - b. Explain what the value of this problem represents (hint: the answers are on the page and has something to do with the bounds).

