**Math 1401 – Integration Worksheet**

State the *definition* as well as the *geometric interpretation* (if any) of:

* the indefinite integral of a function f(x), i.e.
* the definite integral of a function f(x) over an interval [a, b], i.e. 

What is the *Evaluation Theorem for Integrals*, also known as the *1st Fundamental Theorem of Calculus*? What is it good for?

What is the *2nd Fundamental Theorem of Calculus*? What is it good for?

Explain the difference between , , and

Consider the function displayed below, and state whether the indicated quantities are positive, negative, or zero.



|  |  |  |
| --- | --- | --- |
|  |  | f(0) |
| f’(0) | f’(0.5) | f’’(0.5) |
| f’’(3) |  |  |

Use the fourth Riemann sum with right endpoints to find an approximation to the definite Riemann integral

Find the integrals (definite or indefinite) in each of the following problems, using any method you like.

 

 

 

 

 

  (tricky)

 (tricky)  (trick question)

  (trick question) 

  (Trick question)

Compute the following derivatives:

If , find

If , find and . Then use a Riemann sum with 5 subintervals to approximate the value of .