**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Integration Technique Packet**

**BC Calculus**

**Multiple Choice**: For the following problems, please select the **best** answer from the choices given. The selection of “none of these” will be marked incorrect if there is an equivalent answer listed. You may not use a calculator on this portion of the test. (each problem worth 2 points)

\_\_\_\_\_ 1.) Choose the best statement given that  and .

A  B  C  D  E 

\_\_\_\_ 2.) Evaluate the following: 

A  B  C 

D  E None of these

\_\_\_\_\_ 3.) Evaluate the following: 

A  B  C  D  E 0

\_\_\_\_\_ 4.) Find the average value of  on the interval [0, 2].

A  B  C  D  E 7

\_\_\_\_\_ 5.) Which of the following is an antiderivative of ?

A  B  C 

D  E 

\_\_\_\_\_\_ 6.) Consider . Find 

A  B  C 

D  E Does not exist

\_\_\_\_\_\_ 7.) Evaluate the integral: 

A  B  C  D  E none of these

\_\_\_\_\_\_ 8.) Given , determine the value of .

A  B  C  D  E None of these

**Free Response**

Please show all work. You may use a calculator on this portion of the test. Be efficient and don’t waste time integrating things your calculator can do for you!

1.) Given the function.

(a) Set up an integral expression without absolute value bars to represent the area under the curve

on the interval [0, 4]. (1pts)

(b) Write an integral expression to determine the average value of the function on the interval

[0, 4] then find the average value. (2 points) (hint: don’t waste time, use your calc!)

2.) The rate of change of a child’s height in feet at *t*  years can be represented by  on the interval [0, 10]. The function,  can be used to estimate the weight (lbs) of the child at a given age, *x* where x > 2. **Be careful interpreting your units below**.

1. Evaluate . What does your answer mean in the context of the problem? (2pts)
2. Find **. Interpret your answer in the context of the problem. (2 pts)
3. Find **. Interpret your answer in the context of the problem. (2pts)

3.) Given that 

(a) Evaluate the following indefinite integral:  (2 points)

(b) Find g(2), g’(2), and g’’(2) if  round answers to the nearest whole number.

(3 pts)