

You have 20 minutes to complete this quiz which is worth 20 points. Calculators are permitted, but no other aids are allowed. Show all work neatly and in order, and clearly indicate your final answers. Answers must be justified whenever possible in order to earn full credit. When you do use your calculator, sketch all relevant graphs and write down all relevant mathematics.

1. (9 points) Suppose that $f(x) = e^{x^2}$.

a. (1 pt) Write a definite integral to express the true area under the curve $f(x)$, above the x -axis, and between $x = 0$ and $x = 1$.

b. (4 pts) Approximate this definite integral using a right hand Riemann sum with 50 subdivisions. (*Be sure to explicitly write the sum you are using to approximate this definite integral as well as what you entered on your calculator.*)

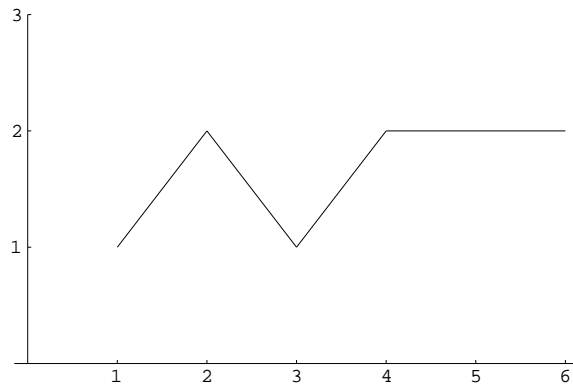
c. (4 pts) Approximate this definite integral using a left hand Riemann sum with 50 subdivisions. (*Be sure to explicitly write the sum you are using to approximate this definite integral as well as what you entered on your calculator.*)

2. (4 points) Suppose that $\int_a^b f(x) dx = 8$ and $\int_a^b g(t) dt = 2$. Evaluate the following definite integrals:

a. (2 pts) $\int_a^b (f(x) + g(x)) dx$

b. (2 pts) $\int_a^b cf(z) dz$

3. (7 points) Consider the graph of $f(x)$ shown below.



a. (4 pts) What is $\int_1^6 f(x) dx$?

b. (3 pts) What is the average value of $f(x)$ on $[1, 6]$?

(Sources: Page 158 #6; Page 174 #14, #17; Page 165 #11)