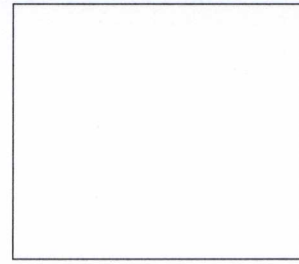


Calc. Homework Assignment-MGT1

Class: _____

Student Number: _____

Name: _____



1. Use the trapezoidal rule and Simpson's rule to approximate the value of the definite integral

$$\int_1^2 \ln x dx; n = 4.$$

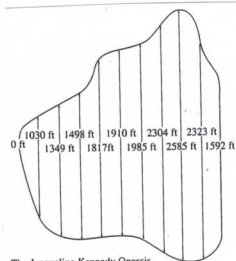
Compare your result with the exact value of the integral. [§7.3 #13]

3. Find the area of the region under the curve

$$y = f(x) = e^{2x}$$

over the indicated interval $x \leq 2$. [§7.4 #9]

2. The reservoir located in Central Park in New York City has the shape depicted in the following figure. The measurements shown were taken at 206-ft intervals. Use Simpson's rule with $n = 10$ to estimate the surface area of the lake. [§7.3 #34]



The Jacqueline Kennedy Onassis Reservoir
Source: Boston Globe

4. Evaluate each improper integral whenever it is convergent.

a. $\int_{-\infty}^0 \frac{1}{(4-x)^{3/2}} dx$

b. $\int_{-\infty}^{\infty} \frac{xe^{-x^2}}{1+e^{-x^2}} dx$

[§7.4 #24 40]

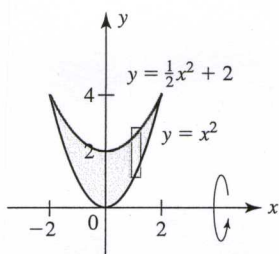
Calculus Homework Assignment 1

5. Show that an integral of the form

$$\int_a^{\infty} e^{-px} dx$$

is convergent if $p > 0$ and divergent if $p \leq 0$.
 [§7.4 #52]

6. Find the volume of the solid that is obtained by revolving the region about the indicated axis or line. [§7.5 #4]



7. Find the volume of the solid of revolution obtained by revolving the region bounded above by the curve $y = f(x) = \sqrt{16 - x^2}$ and below by the curve $y = g(x) = x$ from $x = 0$ to $x = 2\sqrt{2}$ about the x -axis. [§7.5 #19]

8. Find the volume of the prolate spheroid (a solid of revolution in the shape of a football) obtained by revolving the region under the graph of the function $y = \frac{3}{5} \sqrt{25 - x^2}$ from $x = -5$ to $x = 5$ about the x -axis. [§7.5 #32]