Math 001B Assignment 7.7 Name_____

**DIRECTIONS** To receive full credit, you must provide complete legible solutions to the following problems in the space provided. Transfer all your answers to the space provided on the test paper.

1. Use the Trapezoidal Rule, the Midpoint Rule, and Simpson's Rule to approximate the given integral with the specified value of n. (Round your answers to six decimal places.)

$\int_0^1 e^{2\sqrt{t}} \sin(2\pi t)\,dt, \quad n = 8$ , Show all parts of the approximating sum in each case.

a. Find partition of size 8, draw and label all end and evaluation points on the graph.

b. the Trapezoidal Rule

c. the Midpoint Rule

d. Simpson's Rule

e. Use a table of integrals or a CAS to find the exact value of the integral

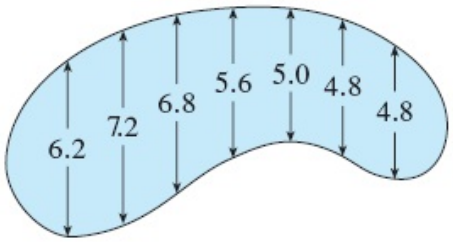
f. Find sample size n so that each of of Tn, Mn and Sn are within 0.01 from the exact value of the integral

i Tn:

ii Mn

iii Sn

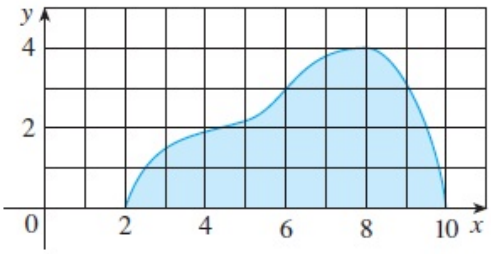
2. The widths (in meters) of a kidney-shaped swimming pool were measured at 2-meter intervals as indicated in the figure. Use Simpson's Rule to estimate the area of the pool. (Round your answer to the nearest square meter.)




3. A radar gun was used to record the speed of a runner during the first 5 seconds of a race (see the table). Use Simpson's Rule to estimate the distance the runner covered during those 5 seconds. (Round your answer to three decimal places.)

| t (s) | v (m/s) | t (s) | v (m/s) |
|---|---|---|---|
| 0 | 0 | 3.0 | 10.51 |
| 0.5 | 4.61 | 3.5 | 10.61 |
| 1.0 | 7.38 | 4.0 | 10.76 |
| 1.5 | 8.82 | 4.5 | 10.87 |
| 2.0 | 9.75 | 5.0 | 10.87 |
| 2.5 | 10.22 | | |

4. Use Simpson's Rule with n = 8 to estimate the volume of the solid obtained by rotating the region shown in the figure about the x-axis and the y-axis. (Round your answers to the nearest integer.)




a. the x-axis

b. the y-axis