Quiz #6 Name: Due June 22nd @ 10:15 a.m.

You may only use your textbook, your notes, and your calculator on these problems. You may not use any outside resources, including tutors or solution manuals. Remember that the purpose of these quizzes is to see if you understand what you have learned on your homework, and also to tell you what you still need to study for the upcoming exam.

1. (2 points) Write a short paragraph describing the relationships between limits, derivatives, and integrals.

2. (2 points) Use 4 Rectangles from the right side to estimate the area under the graph $f(x) = 4 - x^2$ between $x = -2$ and $x = 2$.

3. (3 points) Suppose that f and h are integrable and that $\int_1^9 f(x)dx = -1$, $\int_7^9 f(x)dx = 5$, $\int_7^9 h(x)dx = 4$. Use the rules satisfied by definite integrals to find:

   a) $\int_1^9 -2f(x)dx$

   b) $\int_7^9 [f(x) + h(x)]dx$

   c) $\int_7^9 [2f(x) - 3h(x)]dx$

   d) $\int_9^1 f(x)dx$

   e) $\int_1^7 f(x)dx$

   f) $\int_9^7 [h(x) - f(x)]dx$

4. (3 points) Graph the integral and use an area formula to evaluate the integral $\int_{-4}^0 \sqrt{16 - x^2}\, dx$.