Math 134

Quiz 2 Sample

Ground Hog Day, 2011

You may use your calculator. Indicate any calculations you do with the calculator and show your algebra whenever calculations are done by hand.

1. Let $v(t) = 2 - t^2$.

   (a) Use summation notation to write a formula for R_5 on the interval $[1, 2]$.

   (b) Evaluate your answer to (a) by writing out all the terms of the sum. (*Hint:* Be sure to write out the numerical values for the heights and widths you use before you evaluate the sum with your calculator.)

   (c) Based on our knowledge of the function $v(t)$, is the value of R_5 an underestimate or an overestimate to the true value for the total distance traveled by an object moving according to $v(t)$ on the interval $[1, 2]$. (*Hint:* Think about the graph of v on this interval.)

2. Using properties of integrals and facts about area, evaluate the following integral:

$$\int_{-2}^{2} 4 - \sqrt{4 - x^2}\, dx$$

3. Suppose we know the following integrals:

$$\int_0^5 3f(x)\, dx = 12, \quad \text{and} \quad \int_5^{10} \frac{1}{2} f(x)\, dx = 12.$$

Use this to evaluate the following:

$$\int_0^{10} f(x)\, dx.$$