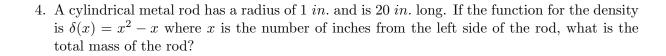# Quiz 5   Name:

Directions: Answer each question to the best of your ability. You may use a calculator, but you must show all work to receive full credit. For problem 1, set up your definite integral based on the Riemann sum with the conditions given. If it is helpful, draw a picture of the problem. (5 pts each)

1. Find the volume of a cone with base radius 5 and total height 10 taking slices parallel to the base.

2. Find the volume of revolution of the area between $f(x) = 2\sqrt{x}$ and $g(x) = x$ on [0,4] around the x-axis.

3. The function for the density of the population in terms of x, the number of miles from downtown Houghton is $\delta(x) = \frac{100}{x^2}$. What is the total population living between 1 and 15 miles from downtown Houghton?

4. A cylindrical metal rod has a radius of 1 $in.$ and is 20 $in.$ long. If the function for the density is $\delta(x) = x^2 - x$ where x is the number of inches from the left side of the rod, what is the total mass of the rod?

5. Given the left end of the rod is placed at the origin, where is the center of mass of the rod?