4. Do WebAssign 8.4. Remember that the WebAssign will be reopened three days before Exam II for you to review the problems. You will be allowed to improve your score by a maximum of three points. Additional attempts on the problems will not be given.

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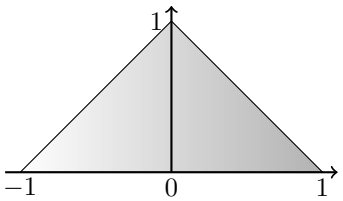
5. (a) Find a Riemann sum which approximates the total mass of a 3×5 rectangular sheet, whose density per unit area at a distance x from one of the sides of length 5 is $\dfrac{1}{1+x^4}$.

   (b) Calculate the mass.

6. Find the total mass of the triangular region below given that the density is $\delta(x) = 1 + x$ grams

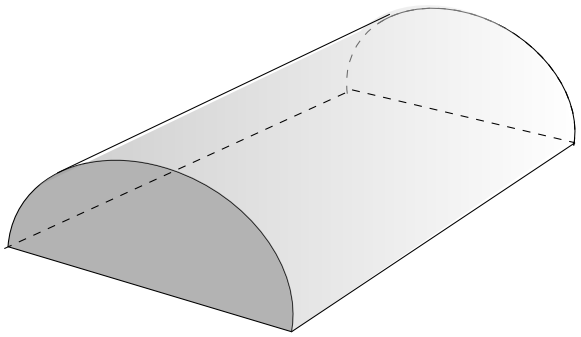


7. Circle City, a typical metropolis, is densely populated near its center, and its population gradually thins out toward the city limits. In fact, its population density is $10,000(3 - r)$ people per square mile at distance r miles from the center.

   (a) Assuming that the population density at the city limits is zero, find the radius of the city.

   (b) What is the total population of the city?

8. A storage shed is the shape of a half-cylinder of radius r and length l.



(a) Use horizontal slices to find the volume of the shed.

(b) Use vertical slices perpendicular to the length to find the volume of the shed.

(c) Use vertical slices perpendicular to the width to find the volume of the shed.

(d) The shed is filled with sawdust whose density (mass/unit volume) at any point is proportional to the distance of that point from the floor. The constant of proportionality is k. Calculate the total mass of sawdust in the shed.