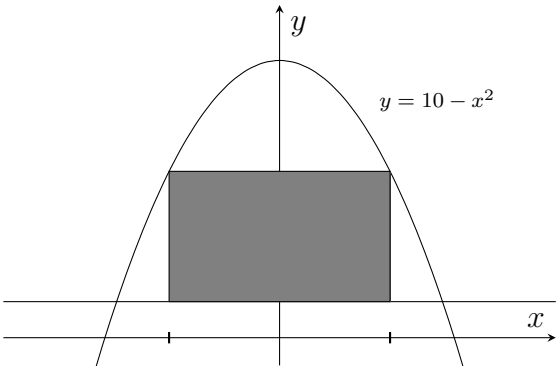
Name _____

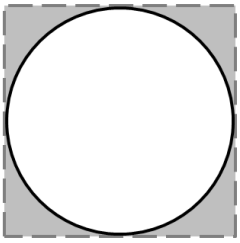
Homework 15
Section 4.3

1. (7) A closed rectangular box is to be constructed as a shipping container. For structural integrity purposes, the width of the base of the container is to be three-fourths of the height. What is the height of the container that will minimize the amount of material needed, given that the container needs to hold a volume of 720 cubic inches? (Round to the nearest 0.1)

2. (6) A rectangle has one edge along the line $y = 1$, and two corners on the curve $y = 10 - x^2$, as shown in the figure below. What is the maximum area of such a rectangle?



3. (7) A company plans to construct a right circular cylinder can, with an open top, and a volume of 125 in^3. The bottom of the can will be constructed from a material which costs 6 cents per in^2, while the side will cost 3 cents per in^2. The company is only able to purchase the materials in rectangular sheets, so there will be some waste when cutting the circular bottom out of a square sheet. What is the minimum cost of the material needed to construct the can?



material for bottom