

Name: _____
PCH: Modeling with Functions Practice Packet 3

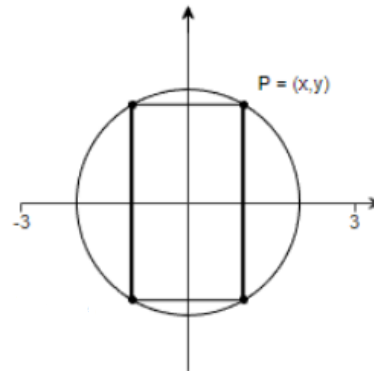
Date: _____
Ms. Loughran

1. A piece of wire 10m long is cut into two pieces. One piece, of length x , is bent into the shape of a square. The other piece is bent into the shape of an equilateral triangle. Express the total area enclosed as a function of x .

2. A right triangle has one vertex on the graph of $y = x^3, x > 0$ at (x, y) , another at the origin, and the third on the positive y -axis at $(0, y)$. Express the area of the triangle as a function of x .

3. Express the volume V of a sphere as a function of its surface area S . If the surface area doubles, how does the volume change?

4. A rectangle is inscribed in a circle of radius 2. Let $P = (x, y)$ be the point in Quadrant I that is a vertex of the rectangle and is on the circle.
- (a) Express the area of the rectangle as a function of x .
- (b) Express the perimeter of the rectangle as a function of x .



5. A Norman window has the shape of a rectangle surmounted by a semicircle, as shown in the figure. A Norman window with perimeter 30 ft is to be constructed. Find a function that models the area of the window as a function of x .

