

1. The perimeter of a rectangle is 60 feet. Express its area A as a function of the width of a side.

2. Let $P = (x, y)$ be a point on the graph of $y = x^2 - 2$.
Express the distance d from P to the origin as a function of x .

3. A rectangle has one corner on the graph of $y = 36 - x^2$, another at the origin, and the other two corners are on the positive x-axis and positive y-axis.

a) Express the area A of the rectangle as a function of x .

b) What is the domain of A ?

4. The volume V of a right circular cone is $V = \frac{1}{3}\pi r^2 h$. If the height is 3 times the radius, express the volume V as a function of r .

5. In economics, revenue R is the amount of money received from the sale of a product. It is equal to the product of unit selling price p and the number of units x actually sold.

The price p , in dollars, and the quantity x sold of a certain product obey the demand equation

$$p = -\frac{1}{10}x + 20, \quad 0 \leq x \leq 20$$

Express the revenue R as a function of x .

What is the revenue if 15 units are sold?

6. A wire 10 meters long is to be cut into two pieces. One piece will be shaped as an equilateral triangle, and the other piece will be shaped as a circle.

Express the total area A enclosed by the pieces of wire as a function of the length x of a side of the equilateral triangle.

What is the domain of A ?

