Math Study Strategies

Math for Landscaping

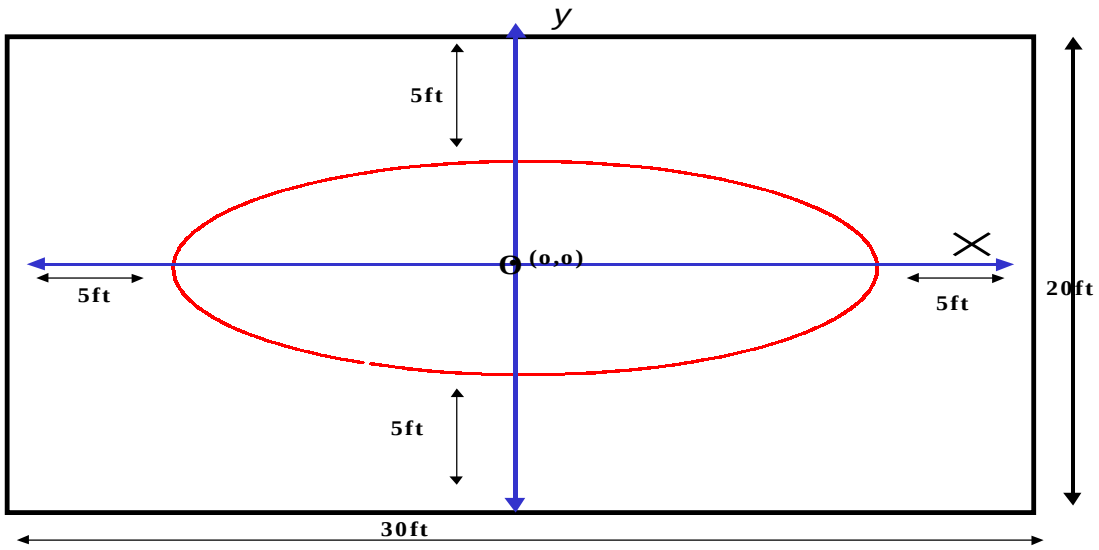
Designing an Elliptical Pool

LANDSCAPE DESIGN: A landscape architect is designing an elliptical pool that will fit in the center of a 20-by-30-foot rectangular garden, leaving at least 5 feet of space on all sides. Find the equation of the ellipse that describes the shape of the elliptical pool.

Solution:

Step 1

Draw a picture to help you visualize the dimensions of the yard and pool



Step 2

Write the formula of the equation of an ellipse having the center in the origin of the axis of rectangular axis of coordinates

$$\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$$

Step 3

Identify the value of a & b

$$a=20-5-5=10ft$$

$$b=30-5-5=20ft$$

Step 4

Substitute values of a and b in the original equation

$$\frac{x^2}{10^2}+\frac{y^2}{20^2}=1 \quad \text{or} \quad \frac{x^2}{100}+\frac{y^2}{400}=1$$

Step 5

Find the common denominator and use proportion rule

$$\frac{x^2}{100}+\frac{y^2}{400}=\frac{4x^2+y^2}{400}=1$$