



7.3U

TI-83 Plus Calculator: Graphing Circles

Functions and Relations

To graph an equation using the graphing calculator, the equation must be in function form, with y on the left side of the equation. To graph $x^2 + y^2 = 16$ using the graphing calculator, solve for y . You must enter two equations.

1. Solve the equation for y .

$$x^2 + y^2 = 16$$

$$y^2 = 16 - x^2$$

$$\sqrt{y^2} = \pm \sqrt{16 - x^2}$$

$$\therefore y = \pm \sqrt{16 - x^2}$$

$$Y1 = \sqrt{16 - x^2}$$

$$Y2 = -\sqrt{16 - x^2}$$

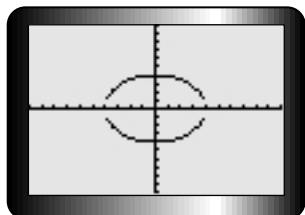


step 1

Enter the expressions for $Y1$ and $Y2$ into the equation editor. Adjust the window.

2. Graph the circle.

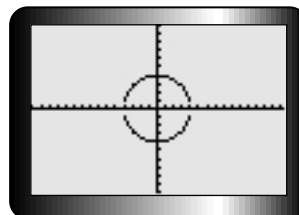
- If you now press **GRAPH**, then the graph will not look like a circle.
- The scales of the axes should be “square.” In other words, the increments of the x - and y -axes should be the same.
Press **ZOOM** and select Zsquare.
- Press **GRAPH**.



step 2a



step 2b



step 2c

Practice 7.3U

- To graph $x^2 + y^2 = 25$, first solve for y .
 - Enter the expressions in (a) into the equation editor and adjust the window.
- For each of the following changes, use your graph of $x^2 + y^2 = 25$ and conjecture how the position and size of the graph will change. Then make each change and compare the resulting graph with your conjecture.
 - Replace x with $(x + 2)$.
 - Replace y with $(y - 4)$.
 - Replace 25 with 16.
 - Replace both x and y with $(x - 1)$ and $(y + 5)$, respectively.
- Graph each circle.
 - $x^2 + y^2 = 9$
 - $(x - 3)^2 + y^2 = 16$
 - $x^2 + (y + 2)^2 = 4$
 - $(x - 1)^2 + (y + 2)^2 = 25$