

7.3U Technology: TI-83 Plus Calculator: Graphing Circles

Specific Expectations

The following expectations are common to both the Functions and Relations and Functions course, unless otherwise indicated.

- LC2.04 sketch the graph of a conic whose equation is given in the form $ax^2 + by^2 + 2gx + 2fy + c = 0$
- OC2.07 describe, by interpreting function notation, the relationship between the graph of a function and its image under one or more transformations
- OC3.05 use graphing technology effectively (e.g., use appropriate menus and algorithms; set the graph window to display the appropriate section of a curve)

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Time Required Functions and Relations:

30 min

Materials and Equipment

- TI-83 Plus calculator

Overview

Students will graph circles using the TI-83 Plus calculator, but they must enter two equations, not one, for each circle into the equation editor. To describe the changing position and size of the circle (question 2 in the *Practice*), students apply their knowledge of translating functions.

Although using the graphing calculator to graph circles is challenging, students should be familiar with using the graphing calculator to graph other relations. Also students will need to think about the domain and range as well as adjusting axes when they graph circles.

Management Options

Groups – Students could work in pairs to help one another with the technology. Once the *Practice* questions are completed, assign one question to each pair that they should present to the class using the TI-83 Plus and the view screen.

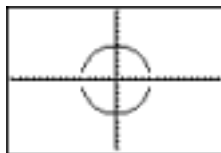
Teacher Demonstration – Lead the class through the first steps of graphing the example and then allow students to try the first question in the *Practice*. After taking up the solution, encourage students to work on their own or in

pairs to complete the *Practice* questions. Take up the solutions as a whole class.

Independent Work – Students can read and work through the first example and then do the *Practice* questions on their own.

TECHNOLOGY SUGGESTION

There is application software for the TI-83 Plus calculator that will allow students to graph conics without having to rearrange an equation. Graphing software such as *Zap-a-Graph* can also be used to graph conics.



ASSESSMENT

Application

Through observation, informally assess if students can apply their knowledge of circles and rearranging formulas to enter the proper equations into the graphing calculator.

Practice 7.3U

Questions with a Functions and Relations

Focus:

1–3

1. (a) $y = \sqrt{25 - x^2}$

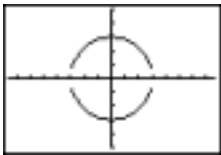
2. (a) The graph will shift 2 units to the left

(b) The graph will shift 4 units up.

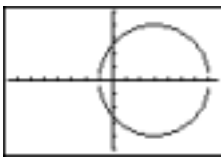
(c) The radius of the graph will now be 4 units instead of 5 units.

(d) The graph will shift 1 unit right and 5 units down.

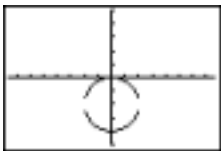
3. (a)



(b)



(c)



(d)

