Name:_____

Class:_____

Introduction to the Absolute Value Function Using the TI-Nspire™

Concepts

- Properties of the absolute value function
- Translations of the absolute value function
- Algebraically and graphically writing the absolute value function

Materials

- TI-Nspire™
- TI-Nspire™ document *absval.tns*
- Student Guide
- Student worksheet

Overview

Students will explore the properties of the absolute value function via its definition and explore the properties when the function is translated.

Materials Required

1. The student should have access to a TI-Nspire™ math and science learning handheld with the document *absval.tns.*

2. The student should have a copy of the student worksheet handout.

The Calculator Application

1. Turn on the TI-Nspire™ handheld.
    - If the screen shown in Figure 1 is not displayed, press (⌂) to open the Home window.
2. Press (7) for 7: My Documents (Figure 1).

Note: The document *absval.tns* should be loaded on your calculator prior to the start of the activity.

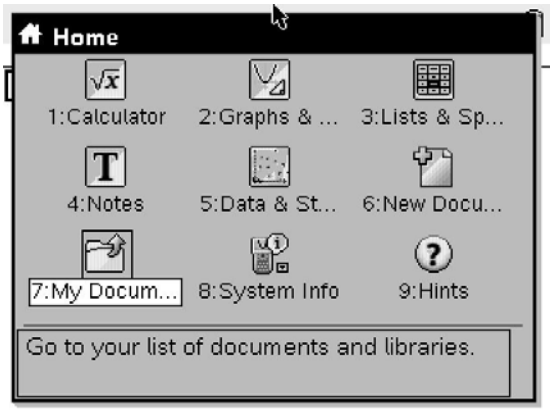

Figure 1

3. Click on *absval.tns* document.

4. Read pages 1&2 of Problem 1 of the *absval.tns* document and fill out your student handout where indicated.

5. On page 3 of Problem 1, grab the movable point at (-6,0) to the positive side of the x-axis. The fixed point is at (0, 0). (Figure 2)

6. The distance from the fixed point to the movable point is shown on the top right of the screen and will be captured automatically into the spreadsheet on page 5 of Problem 1. (Figure 3)

   Note: The data you captured into the spreadsheet may be different than your peers.

7. Insert a **Graphs & Geometry** application page to your document next to the spreadsheet on page 5. (Figure 4)

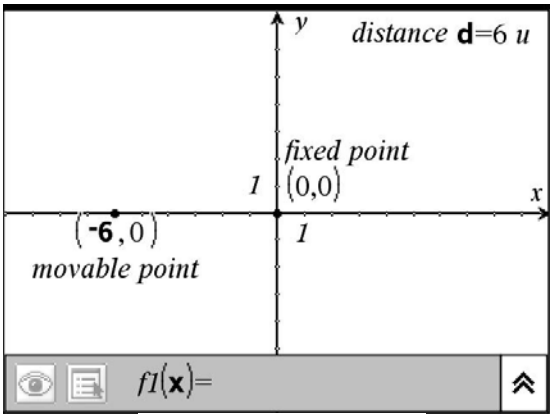

Figure 2

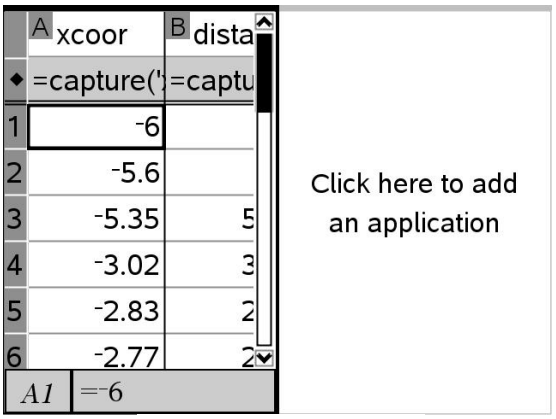

Figure 3

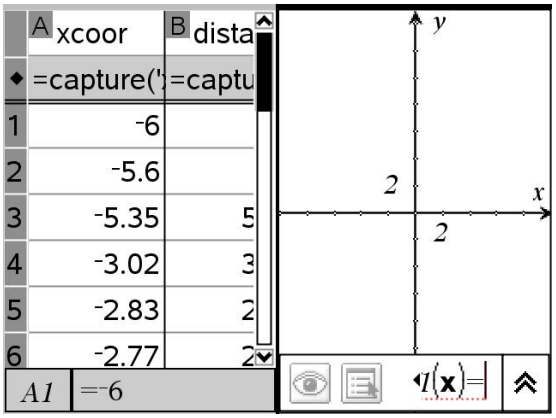

Figure 4

8. Press menu 3 4 for Menu 3: Graph Type, 4: Scatter Plot (Figure 5)

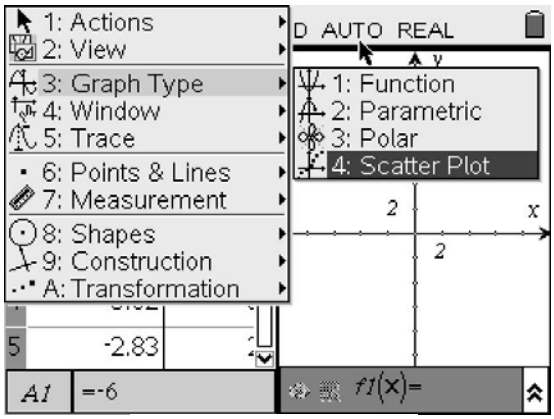

Figure 5

9. Choose ***xcoor*** for the x-axis and ***distance*** as the y-axis to show the graph for the data collected in the spreadsheet. (Figure 6)

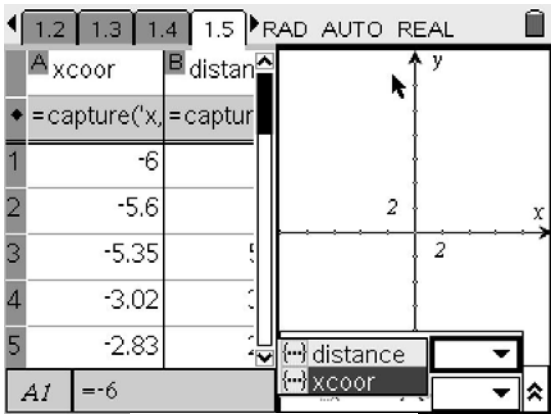

Figure 6

10. You will see the graph of the function $f(x) = |x|$ (Figure 7)

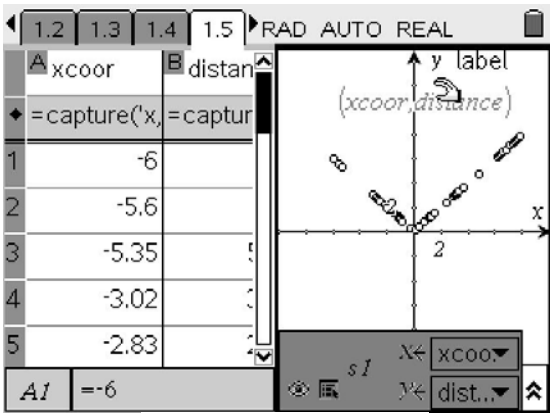

Figure 7

11. Press menu 3 1 for Menu 3: Graph Type, 4: Function (Figure 8)

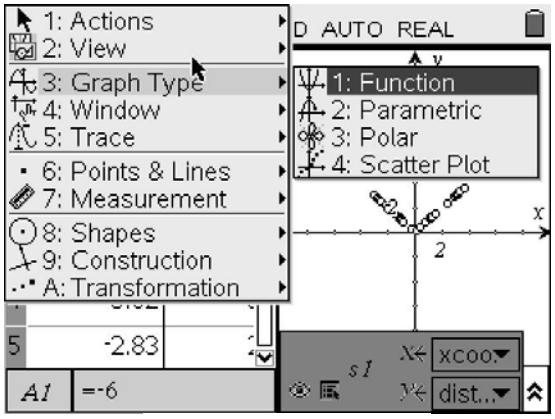

Figure 8

12. Type into f1(x)= *abs(x)* and press enter. The points on the scatter plot will be traced over by the graph of the function $f(x) = |x|$.

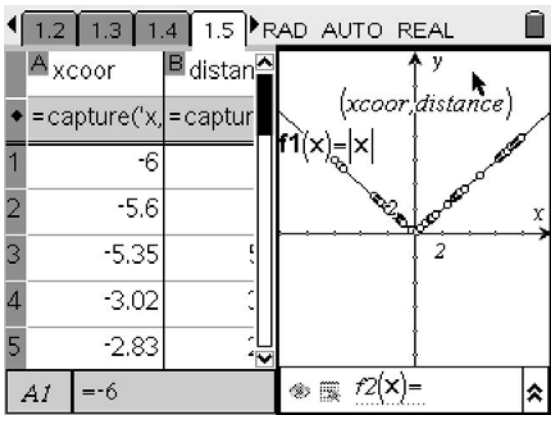

Figure 9

13. If time permits, complete Problem 2 and Problem 3. These problems are done in the same manner as Problem 1 except that the fixed point is not at the origin.

    (Figures 10 & 11)

Notes:

1) You will have to repeat steps 4-11 for Problems 3&4. Students will also have to manipulate the parent function to have their scatter plot points traced over correctly.

2) You will also have to use *(xcoor2,dist2)* and *(xcoor3,dist3)* for the scatter plots for Problem 2 and Problem 3 respectively.

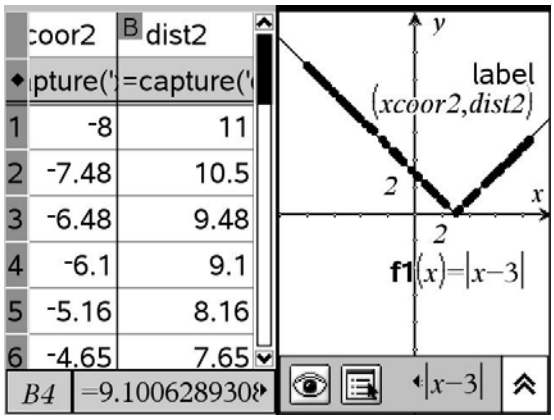

Figure 10

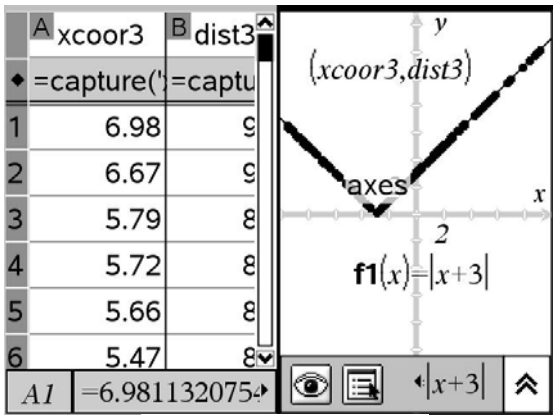

Figure 11