TI-*nspire*™

## What's My Absolute Value?

Name _____

Class _____

In this activity, you will:

- *discover the rule for taking the absolute value of a variable inside a function.*
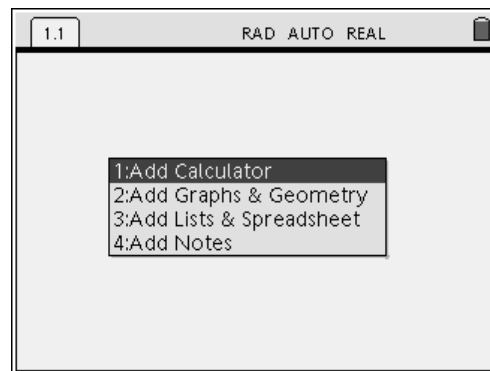- *discover the rule for taking the absolute value of a function.*

Open a new document (see directions below) on your handheld and work by yourself or with a partner to complete the activity. Use this document as a reference and to record your answers.

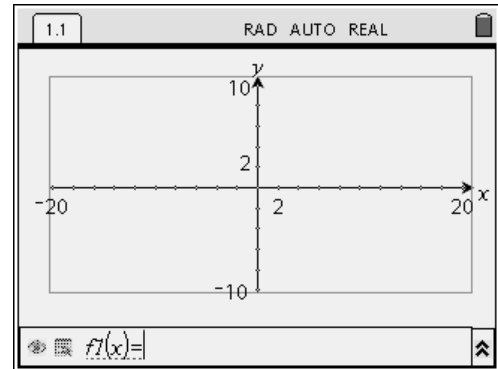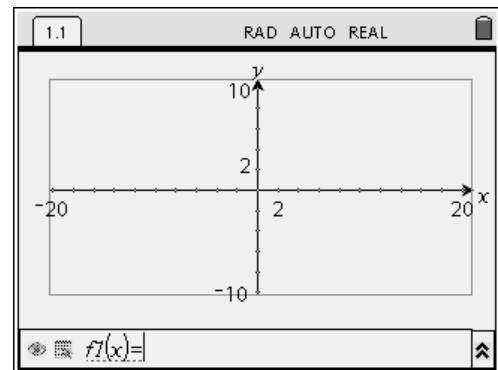Press ⌂. This takes you to the home screen.
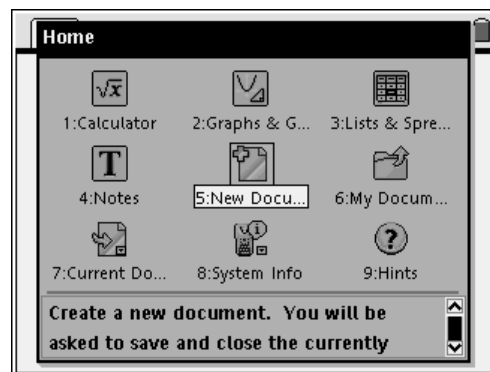
Arrow to ❺ New Document.

Press ⏎

Type ② Add Graphs and Geometry.

Graph y = 3x - 4.

Just type 3x – 4 for the f1(x) on your calculator
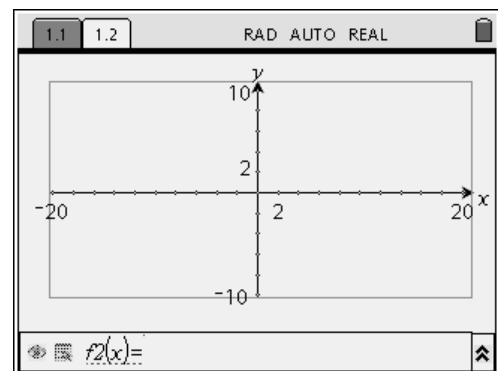screen. Press ⟨enter⟩ to see the graph.

Sketch the graph on your paper.

What kind of graph did you get?

Are you surprised?
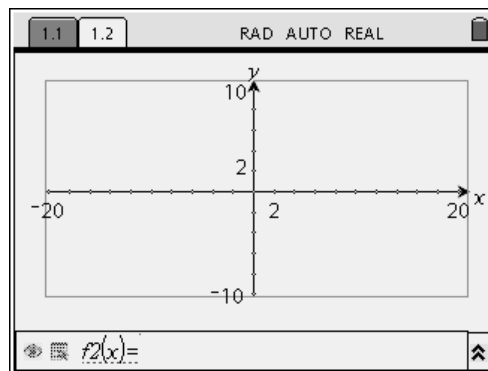
We are going to add another graph page to our
document.

⟨ctrl⟩ I; ② Add Graphs and Geometry.

Graph y = 3abs(x)-4.

Type just as it is written in f2(x) on your calculator.
Press ⏎ to see the graph.

Sketch the graph on your paper.

What kind of graph did you get?

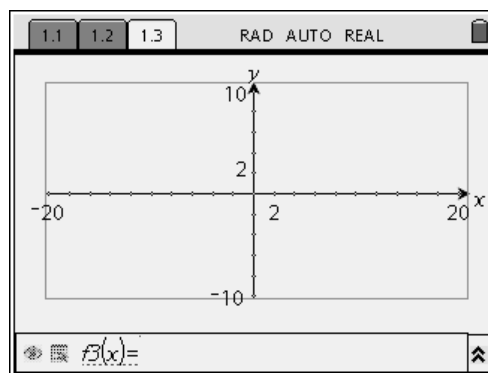Why did you get that kind of graph?

How would you describe how you would graph this
transformation?

Don't know? Just wait, it'll come to you!
We are going to add another graph page to our
document.

Graph y = abs(3x – 4).

Type just as it is written in f3(x) on your calculator.
Press ⏎ to see the graph.
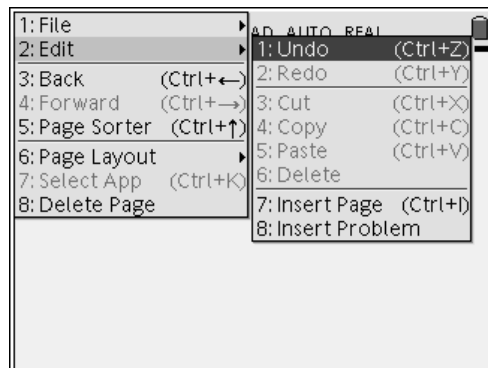
Sketch the graph on your paper.

What kind of graph did you get?

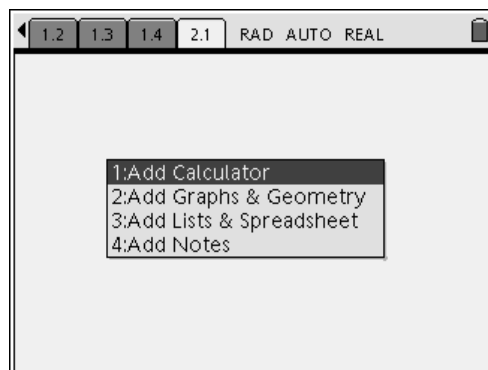How would you describe how you would graph this transformation?

Don't know? Just wait, it'll come to you!

This time we are going to add another problem to our document.
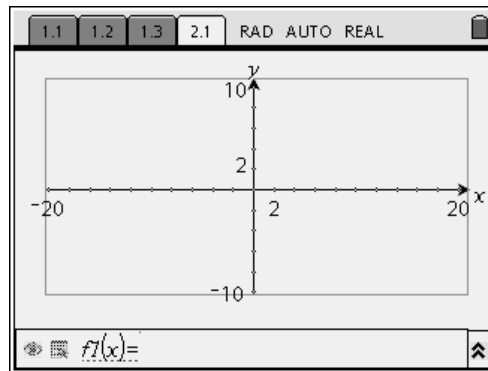
Press (ctrl)(⌂); ❷ Edit, ❽ Insert Problem.

❷ Add Graphs and Geometry.

Graph $y = x^2 - 3x - 4$.

Just type $x^2 - 3x - 4$ for the f1(x) on your calculator screen. Press ⏎ to see the graph.

Sketch the graph on your paper.

What kind of graph did you get?

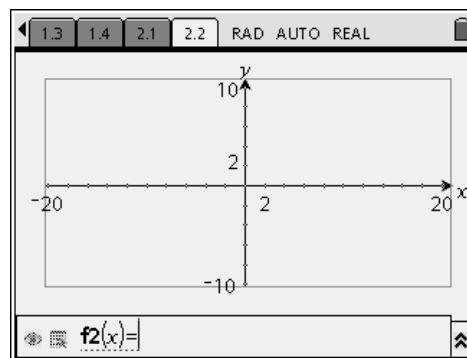Are you surprised? Why or why not?

We are going to add another graph page to our document.

. Graph $y = (abs(x))^2 - 3abs(x) - 4$.

Type just as it is written into f2(x) on your calculator. Press ⏎ to see the graph.

Sketch the graph on your paper.

What kind of graph did you get?

Are you surprised?

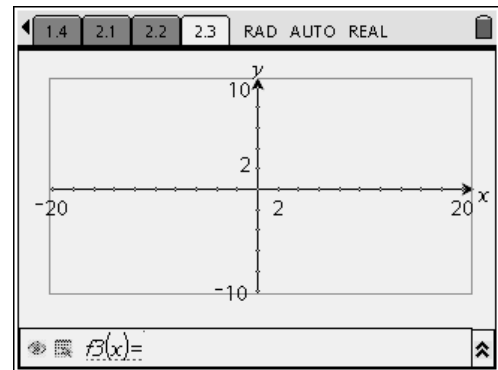How would you describe how you would graph this transformation?

If you don't see it, go back and look at problem 1.2.
What do these 2 problems have in common?
(Remember to go back to a previous page press
(ctrl) ◀).
We are going to add another graph page to our document.

Graph y = abs(x^2 – 3x – 4).

Type just as it is written into f3(x) on your calculator. Press · to see the graph.

Sketch the graph on your paper.

What kind of graph did you get?

Are you surprised? Why or why not?

How would you describe how you would graph this transformation?

If you don't see it, go back and look at problem 1.3.
What do these 2 problems have in common?

Now if I give you a graph (no equation) can you graph the absolute value of the variable and the absolute value of the function?

Explain how you would go about graphing each of these. How are the graphs the same? How are they different?

Try graphing $f(|x|)$ and $|f(x)|$ given the following f(x).