

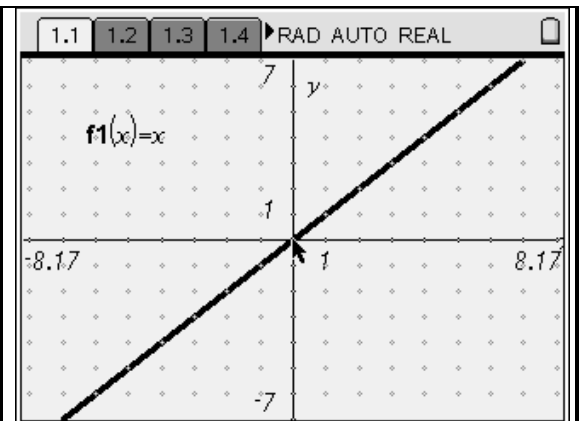
Linear Changes

Time required 50 minutes

By Mary A. Brese


Open the file; ***linear Changes***

Note the function written on the screen with its graph.




PROBLEM 1

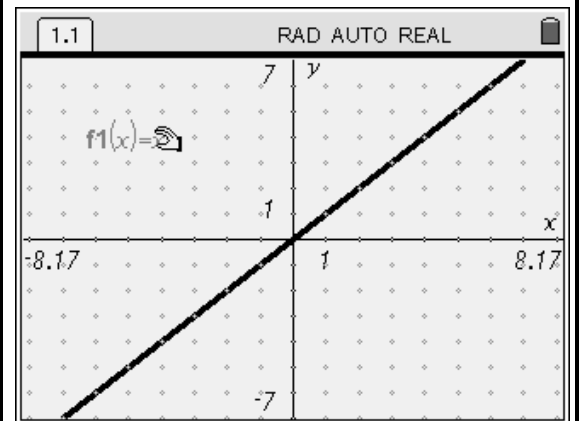
1. Change the coefficient of the x variable in the equation and observe how the graph changes.

Use the navpad to move cursor to the equation until cursor changes to a pointing-hand  and the equation blinks.



Open the text box containing the equation by

[ ]


Move cursor left of the x variable and enters a new value. []




Observe the changes in the graph.

*****   will undo your changes. *****


This should be done before moving to page 1.2.

2. Move to page 1.2 [] and answer the questions based on your observations.

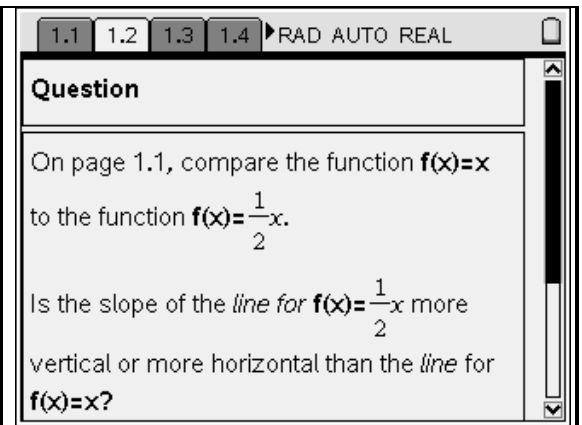
Answer 1.2:

3. Move to page 1.3 [] and answer the questions based on your observations.

Answer 1.3:

4. Move to page 1.4 [] and answer the questions based on your observations.

Answer 1.4:

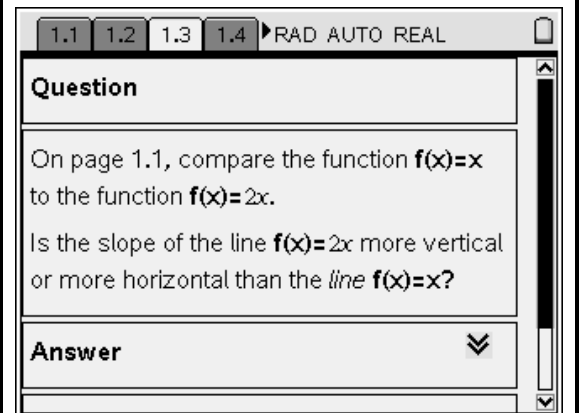


1.1 1.2 1.3 1.4 ▸ RAD AUTO REAL

Question

On page 1.1, compare the function $f(x)=x$ to the function $f(x)=\frac{1}{2}x$.

Is the slope of the *line* for $f(x)=\frac{1}{2}x$ more vertical or more horizontal than the *line* for $f(x)=x$?



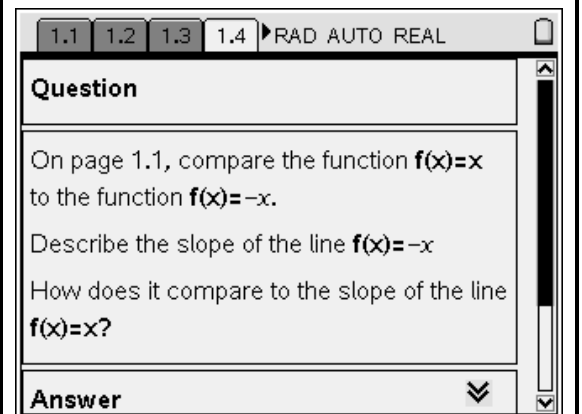
1.1 1.2 1.3 1.4 ▸ RAD AUTO REAL

Question

On page 1.1, compare the function $f(x)=x$ to the function $f(x)=2x$.

Is the slope of the line $f(x)=2x$ more vertical or more horizontal than the *line* $f(x)=x$?

Answer ▾



1.1 1.2 1.3 1.4 ▸ RAD AUTO REAL

Question


On page 1.1, compare the function $f(x)=x$ to the function $f(x)=-x$.


Describe the slope of the line $f(x)=-x$

How does it compare to the slope of the line $f(x)=x$?

Answer ▾


PROBLEM 2

1. On page 2.1, [] Change the constant value of the equation and observe how the graph changes.


Use navpad to move cursor to the equation until cursor changes to a pointing-hand  and the equation blinks.

Open the text box containing the equation


[ ]

Move cursor right of the x variable and add constant value. []

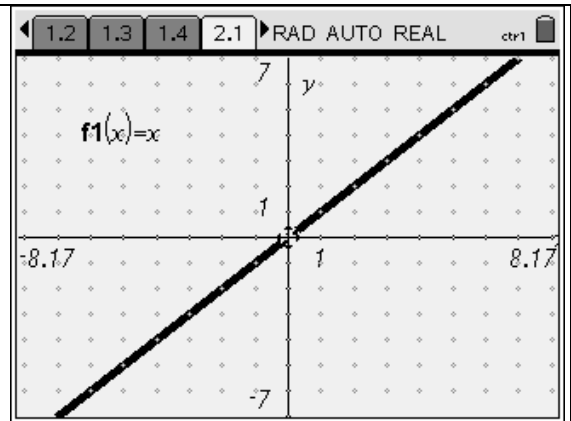
Observe the changes in the graph.

2. Move to page 2.2 [] and answer the questions based on your observations.

Answer 2.2:

3. Move to page 2.3 [] and answer the questions based on your observations.

Answer 2.3:



Question

On page 2.1, **add a constant** value to the equation.
What change did it make to the graph?

Answer

Question

On page 2.1, **subtract a constant** value, to the right of the x variable, in the equation.
What change did it make to the graph?

Answer

PROBLEM 3

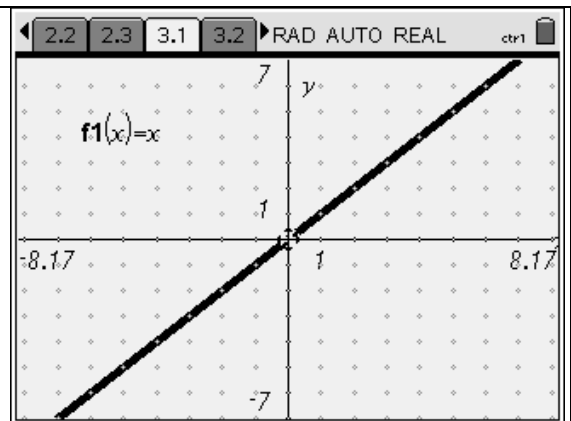
1. On page 3.1, [ctrl ▶] grab the line in different spots [ctrl Ⓜ] and move the graph around. Observe what happens to the equation as you move the graph up and down or rotate it.

2. Move to page 3.2 [ctrl ▶] and answer the questions based on your observations.

Answer 3.2:

3. Move to page 3.3 [ctrl ▶] and answer the questions based on your observations.

Answer 3.3:



Question

On page 3.1, **grab the center** of the graphed line and *move it up and down*. What changes in the equation?

Answer

Question

On page 3.1, **grab the graphed line on the right or left end of the line, then move the line**. What changes in the equation? Describe what is happening to the line as you move it?

ASSESSMENT:

PROBLEM 4

Based on this activity and your observations, answer the questions on pages 4.1 & 4.2

Answer 4.1:

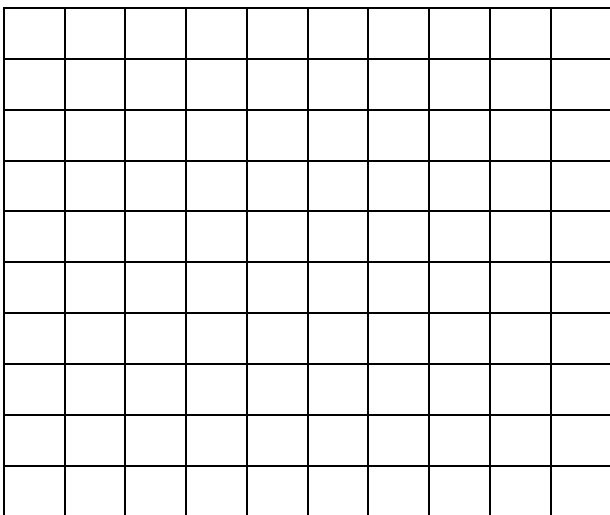
(A) _____

(B) _____

(C) _____

Answer 4.2:

[Draw the graph]



3.1 3.2 3.3 4.1 RAD AUTO REAL

Question

In a linear equation written as:
 $f(x)=mx+b$
 m is the (A) _____ of the line. It controls the (B) _____ of the line.
 b is the y -intercept of the line. It dictates where the line will (C) _____

3.2 3.3 4.1 4.2 RAD AUTO REAL

Grab & move the line to graph the function:
 $f(x) = -x + 3$

