Vertical and Horizontal Translations

A *family* of functions is a group of functions with common characteristics.

List the families of functions studied:

Ex. Linear

Linear, Absolute value, Power (quadratic, cubic), Exponential, Logarithmic

A *parent* function is the simplest function of the family, producing the basic graph of the function with no vertical or horizontal translation.

In this activity, you will use your handheld to study 7 functions.

For each function displayed:

a. determine to which family of functions it belongs
b. determine the parent function
c. describe the vertical and horizontal translation
(from the parent function to the given function)

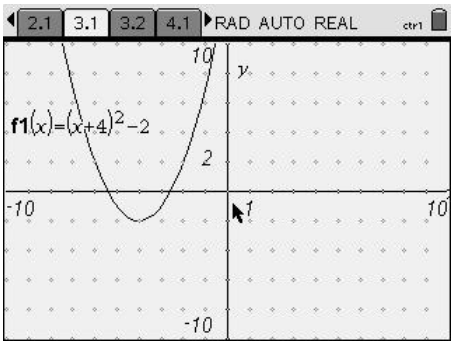
Note: The grid is visible on the graphs to help identify the translations.

1. $f(x) = (x+4)^2 - 2$

a. Quadratic

b. $f(x) = x^2$

c. shift left 4 and down 2

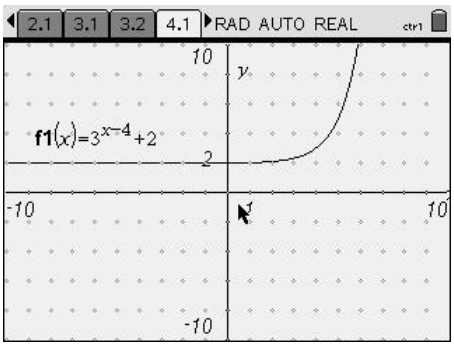


2. $f(x) = 3^{x-4} + 2$

a. Exponential

b. $f(x) = 3^x$

c. Shift right 4 and up 2

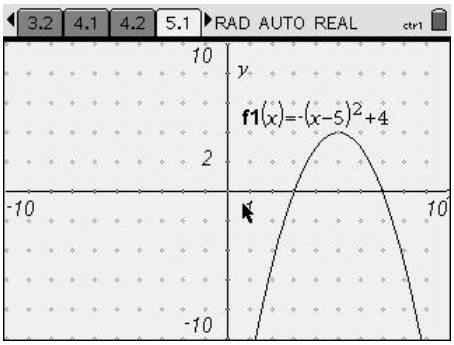


3. $f(x) = -(x-5)^2 + 4$

a. Quadratic

b. $f(x) = -x^2$

c. Shift right 5 and up 4

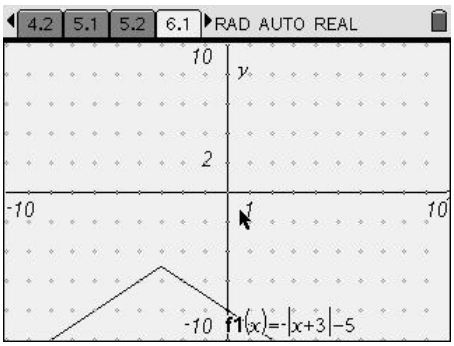


4. $f(x) = -|x+3| - 5$

a. Absolute value

b. $f(x) = -|x|$

c. Shift left 3 and down 5

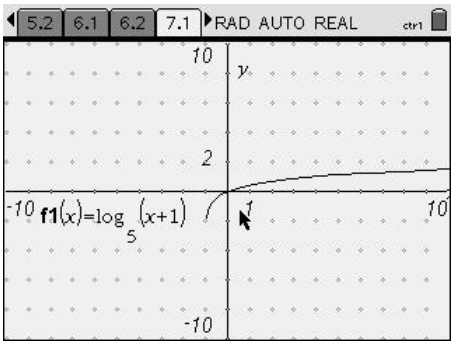


5. $f(x) = \log_5(x+1)$

a. Logarithmic

b. $f(x) = \log_5 x$

c. Shift left 1

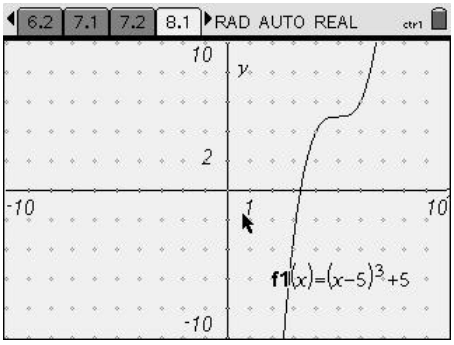


6. $f(x) = (x-5)^3 + 5$

a. Cubic (power)

b. $f(x) = x^3$

c. Shift right 5 and up 5



7. $f(x) = -x^5 - 2$

a. Power

b. $f(x) = -x^5$

c. Shift down 2