**Function Transformations**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When adding a constant, k, to a function, it moves the graph of the function \_\_\_\_\_\_\_\_\_\_\_\_\_. If k is positive then the graph shifts \_\_\_\_\_\_\_, and if k is negative then the graph shifts \_\_\_\_\_\_\_\_\_.

In a linear equation y = mx + b, increasing the y-intercept moves the graph up along the y-axis, and decreasing the y-intercept moves the graph down along the y-axis.

If k is added or subtracted from the x-value, it translates the graph of the function \_\_\_\_\_\_\_\_\_\_\_\_\_. Adding k shifts the graph to the \_\_\_\_\_\_ and subtracting k, shifts the graph to the \_\_\_\_\_\_\_. (x+k) shifts the graphs k units to the \_\_\_\_\_\_ because when x+k=0, x=-k.

1. Describe how the change in the graphs of the each function is reflected in the equations of each function.

 

1. If the original equation of the function is f(x) = x2 and the translated function is g(x) = (x+3)2+5, describe the changes in the graph.
2. If the original equation of the function is f(x)=2x, and the translated function is g(x)=2(x-4)+6, describe the changes in the graph.
3. If the original equation of the function is f(x)= 2x and the translated function is g(x)= 2x-1-3, describe the changes in the graph.
4. The function f(x) represents an airplane’s flight path. If the airplane’s pilot decided to increase the airplane’s altitude by 5000 ft. to avoid a storm, what happens to the equation of the function f(x)?

Independent Practice

1. Describe how the change in the graph of the function is reflected in the equation of the function.



1. If the original equation of the function is f(x) = x2 and the translated function is g(x) = (x-2)2+9, describe the changes in the graph.
2. If the original equation of the function is f(x)=3x, and the translated function is g(x)=3(x-1)-7, describe the changes in the graph.
3. If the original equation of the function is f(x)= 2x and the translated function is g(x)= 2x+6+4, describe the changes in the graph.
4. The quarterback of the football team is standing on the 10 yard line and throws the ball to his receiver. The motion of the ball is modeled by the function f(x). Later in the game the quarterback is on the 30 yard line, he decides to run the same play and throws the ball to his receiver. What has to happen to the equation of the function f(x) so that it models the motion of the ball when it is thrown at the 30 yard line?