



## Graph Transformations and Function Analysis

### Today's Standard

HSF.BF.B3 - Identify the effect on the graph of replacing  $f(x)$  by  $f(x) + k$ ,  $k f(x)$ ,  $f(kx)$ , and  $f(x + k)$  for specific values of  $k$  (both positive and negative); find the value of  $k$  given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.

Cues	Notes
What is a vertical shift?	Vertical shift: Adding a constant $k$ to $f(x)$ moves the graph up or down.
How does multiplying $f(x)$ by $k$ affect the graph?	Multiplying $f(x)$ by $k$ : Multiplies the $y$ -values, causing vertical stretching or compressing.
What is a horizontal shift?	Horizontal shift: Adding a constant $k$ inside the function argument moves the graph left or right.
What are even and odd functions?	Even functions: Symmetric about the $y$ -axis. Odd functions: Symmetric about the origin.
How can technology help in visualizing transformations?	Technology: Graphing calculators and software can visually demonstrate the effects of transformations.

### Summary

This standard teaches how various transformations affect function graphs. Understanding vertical and horizontal shifts, and recognizing even and odd functions are essential. Technology aids in visualizing these changes.