2.5: Transformations of Functions

Let's analyze the square root function and use that to make some generalizations about function transformations.

Parent Function: $y = \sqrt{x}$

Domain: _____ Range: _____

Trans. Function: $y = a\sqrt{x-h}+k$

Describe how a, h, and k change the graph of the parent function?

In general....

If f(x) is a parent function, describe what happens to the the graph of the parent function for the transformed function below.

af(x - h) + k

|a| > 1:

h > 0:

k > 0:

0 < |a| < 1:

h < 0:

k < 0:

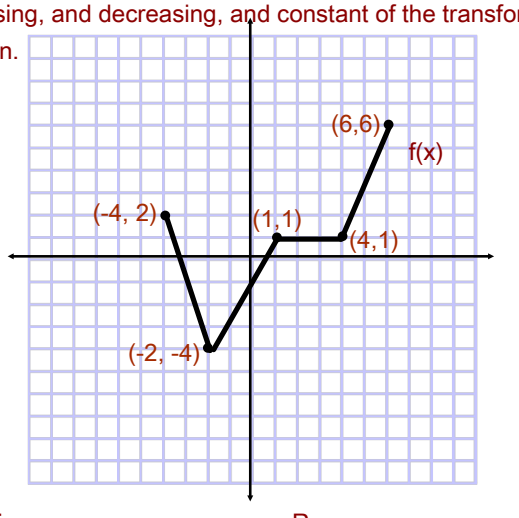
What about - f(x)?

Example: If $f(x)=\sqrt{x}$, what would the graph of -f(x) look like?

What about f(- x)?

Example: If $f(x)=\sqrt{x}$, what would the graph of f(-x) look like?

Use the function f(x) below and then graph the following transformations. Give the domain, range, intervals of increasing, and decreasing, and constant of the transformed function.



Domain: _____ Range: _____

Increasing: _____ Decreasing: _____

Constant: _____

f(x + 3) - 1

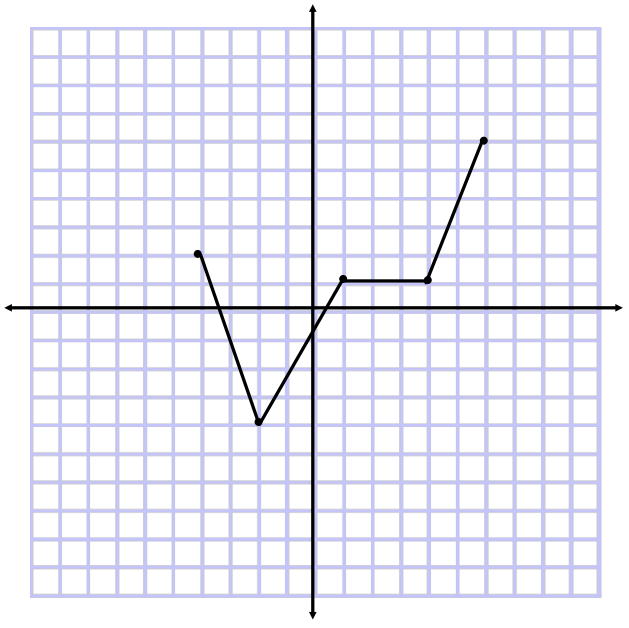
Dom:

Ran:

Inc:

Dec:

Cons:



-2f(x - 2)

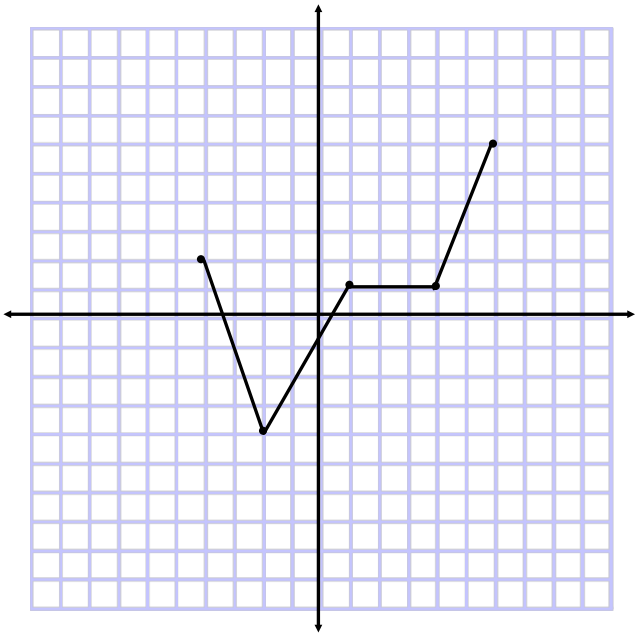
Dom:

Ran:

Inc:

Dec:

Cons:



f(-x) + 4

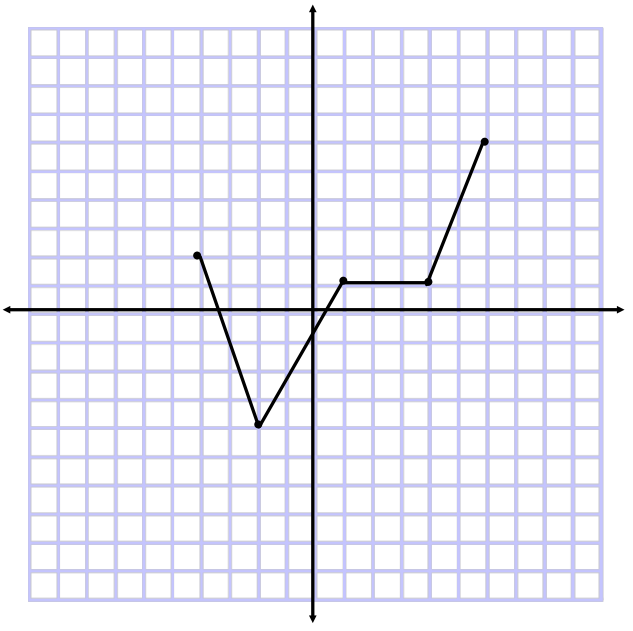
Dom:

Ran:

Inc:

Dec:

Cons:



$-\frac{1}{2}f(-x-3)$

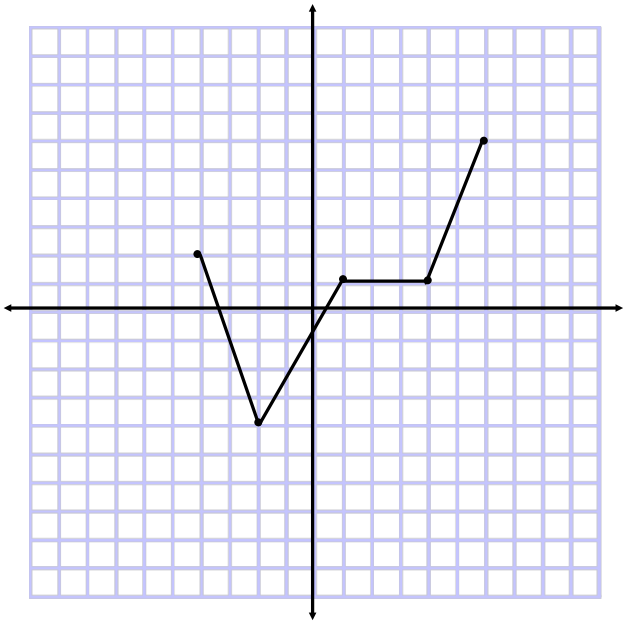
Dom:

Ran:

Inc:

Dec:

Cons:



Classwork/Homework:

PS 2.5