

Chapter 1 & 2 Summary

A. General Transformation Equation:

$$y = af(b(x - h)) + k \quad \text{or} \quad y - k = af(b(x - h))$$

a	Vertical stretch by a factor of $ a $	If $a < 0$, reflection over x -axis
b	Horizontal stretch by a factor of $\left \frac{1}{b}\right $	If $b < 0$, reflection over y -axis
h	Horizontal translation	
k	Vertical translation	

Transformations must be listed in an appropriate order. Stretches, reflections, then translations.

- Using mapping notation: $(x, y) \rightarrow \left(\frac{1}{b}x + h, ay + k\right)$ (note: a, b, h, k could be positive or negative depending on the question)

B. Inverses

$$(x, y) \rightarrow (y, x)$$

$$\text{Original } y = f(x) \quad \text{Inverse } x = f(y)$$

If the original graph passes the Horizontal Line Test, then the inverse will be a function.

If the inverse is a function, we can use the notation : $f^{-1}(x)$

The domain of the original becomes the range of the inverse.

The range of the original becomes the domain of the inverse.

C. Radical Functions and Equations

Graphing Radical Functions using Transformations: $y = a\sqrt{b(x - h)} + k$

Solving by graphing:

- If equation equals zero: graph the radical function and see where it crosses the x -axis
- If equation doesn't equal zero: isolate the radical, graph both sides of equation separately, find the intersection point.

Review:

p.56 #1, 3, 6, 9 – 12, 15, 16, 17

p.99 #2, 4, 5, 7, 13b, 16bc

p.102 #8, 12 (graphically only)