

Remote Lesson 6.4

Practice: Describe the transformations from the parent that have taken place.

1. $f(x) = 2|x - 1| + 4$ Horizontal shift R1, Vertical Stretch 2, Vertical Shift up 4
2. $f(x) = -3\sqrt{4x}$ Horizontal shrink $\frac{1}{4}$, Vertical stretch 3, reflection over x-axis
3. $f(x) = \frac{3}{2x-6}$ Horizontal shrink $\frac{1}{2}$, Horizontal shift R3 (factor out the 2), Vertical Stretch 3

Building a polynomial function using transformations

Ex. Given $f(x) = x^3 + 8x$. Write the polynomial equation for the given transformations

1. Vertically stretch f by a factor of 4
So this would be $4f(x)$
Therefore, $4(x^3 + 8x)$
Our polynomial is $4x^3 + 32x$
2. Horizontally shrink f by a factor of $\frac{1}{3}$
Remember horizontal changes are "countercultural"
This would be $f(3x)$. $f(3x) = (3x)^3 + 8(3x)$
 $= 27x^3 + 24x$
3. Reflect f across the x-axis
This would be $-f(x)$ $-f(x) = -(x^3 + 8x)$
 $= -x^3 - 8x$

Now you try

Given $f(x) = \sqrt{x^2 + x - 4}$, find the resulting equation for the given changes

1. Vertical translation up 2 $f(x) = \sqrt{x^2 + x - 4} + 2$
2. Vertical stretch 4; reflect over x-axis $f(x) = -4\sqrt{x^2 + x - 4}$
3. Horizontal shrink of $\frac{1}{3}$ $f(x) = \sqrt{9x^2 + 3x - 4}$
4. Horizontal shift right 2 (think-this would be $f(x-2)$)
 $f(x) = \sqrt{x^2 - 3x - 2}$

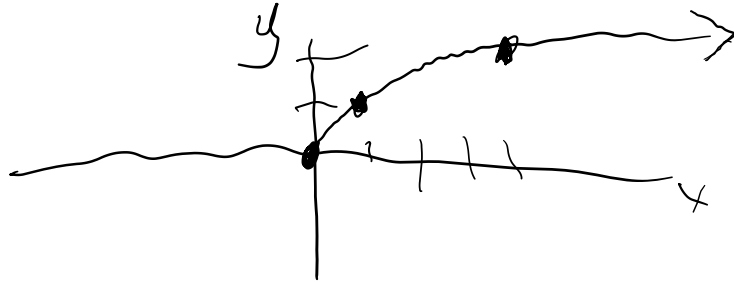
Make sure you can affirm the provided answers!

You also need to be able to graph scale changes and translations of toolkit functions.
(with anchor points!)

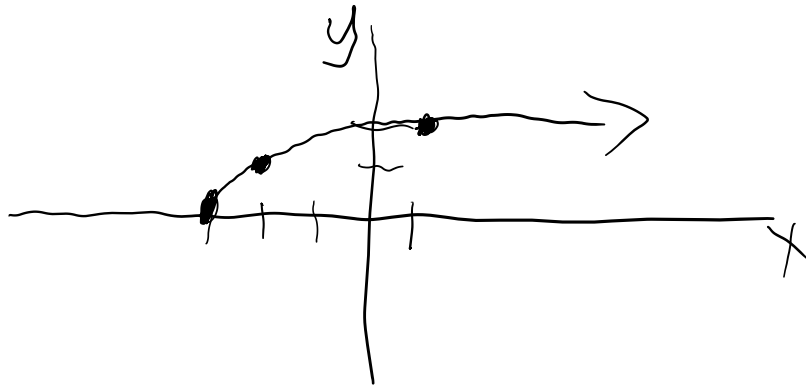
Example

$$f(x) = \sqrt{x+3}$$

Parent



Answer



Note! This is not going to be asked of you for logistic functions at this point, as this is not a real known in your toolbox yet.

HW pp 139-140 9-29 odd, 39-49 odd