Remote Lesson 6.4

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

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

Building a polynomial function using transformations

Ex. Given $f\left(x\right)= x^{3}+8x$. 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 $4x^{3}+32x$

1. Horizontally shrink *f* by a factor of $\frac{1}{3}$

*Remember horizontal changes are “countercultural”*

*This would be* f(3x). $f\left(3x\right)= (3x)^{3}+8(3x)$

$=27x^{3}+24x$

1. Reflect *f* across the x-axis

This would be -f(x) $-f\left(x\right)=-(x^{3}+8x)$

 $= -x^{3}-8x$

Now you try

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

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

 $f\left(x\right)=\sqrt{x^{2}-3x-2}$

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

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

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