Inspiring Greatness

ISD

INDEPENDENCE SCHOOL DISTRICT

Math Virtual Learning

Algebra 2A

Polynomial Parent Functions

May 4, 2020

Lesson:

Sketching Polynomial Parent Functions

Learning Target:

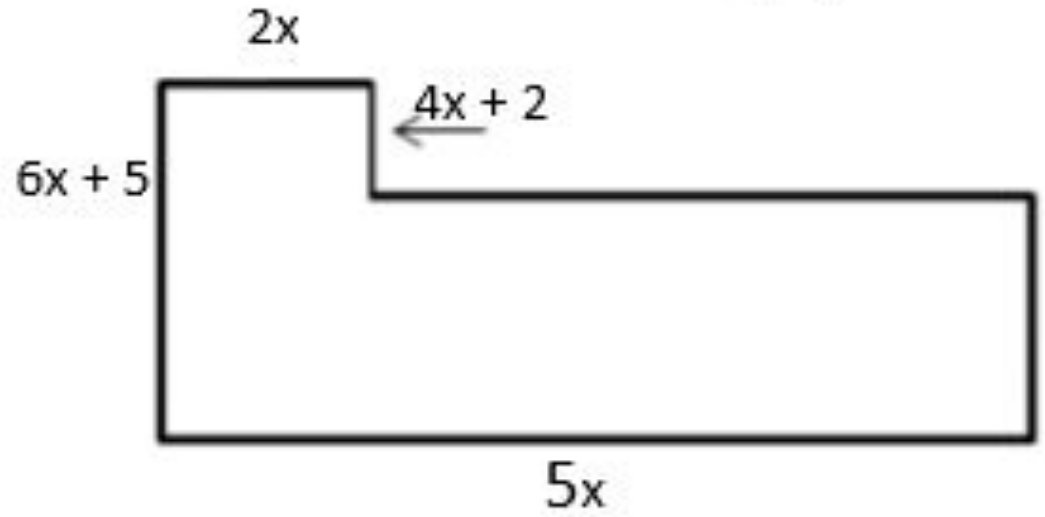
LT C1 I can create a sketch of a polynomial function from an equation and create a polynomial equation from a graph.

Objective:

Students will be able to sketch functions by using parent function transformations.

Warm Up

Find the perimeter and area:



Warm Up Answers

$$A(x) = 18x^2 + 19x$$

$$P(x) = 22x + 10$$

Lesson

Watch this video: https://www.youtube.com/watch?v=vzytNmwSehw

Four things to look for when using parent functions in graphing polynomials of the form: $y = a(x \pm h)^n \pm k$

a. Reflection across the y-axis (is "a" negative?)
b. Translation h units to the left or right
c. Translation k units up or down
d. Vertical dilation (a)

y = a(x ± h)^n ± k

Lesson

There are two links below that will take up to a desmos explore activity. Use them to help you understand what the different transformations will do to functions.

https://www.desmos.com/calculator/fmxds1uvhe

https://www.desmos.com/calculator/yjubwhfsyp

Practice

For the following equations, list the parent function and transformations of the

1. $y = (x + 3)^3 - 5$
2. $y = 2x^4 + 4$
3. $y = x^2 + 3$
4. $y = \frac{1}{3}(x - 4)^4 + 6$

Practice Answers

1. $y = (x + 3)^3 - 5$

Parent Function: Cubic

Transformations

1. Left 3
2. Down 5

Practice Answers

2. $y = 2x^4 + 4$

Parent Function: Fourth Degree

Transformations

1. Dilation of 2
2. Up 4

Practice Answers

3. $y = x^2 + 3$

Parent Function: Quadratic

Transformations:

1. Up 3

Practice Answer

4. $y = \frac{1}{3}(x-4)^4 + 6$

Parent Function: Fourth Degree

Transformation:

1. Dilation of a third
2. Right 4
3. Up 6

Additional Resources

https://www.mathsisfun.com/sets/function-transformations.html

Additional Practice

https://highschoolmathteachers.com/wp-content/uploads/2015/09/Day-31-Practice-PDF.pdf