Title of Lesson:
Understanding Polynomials




By the end of this lesson, I will be able to answer the following questions…

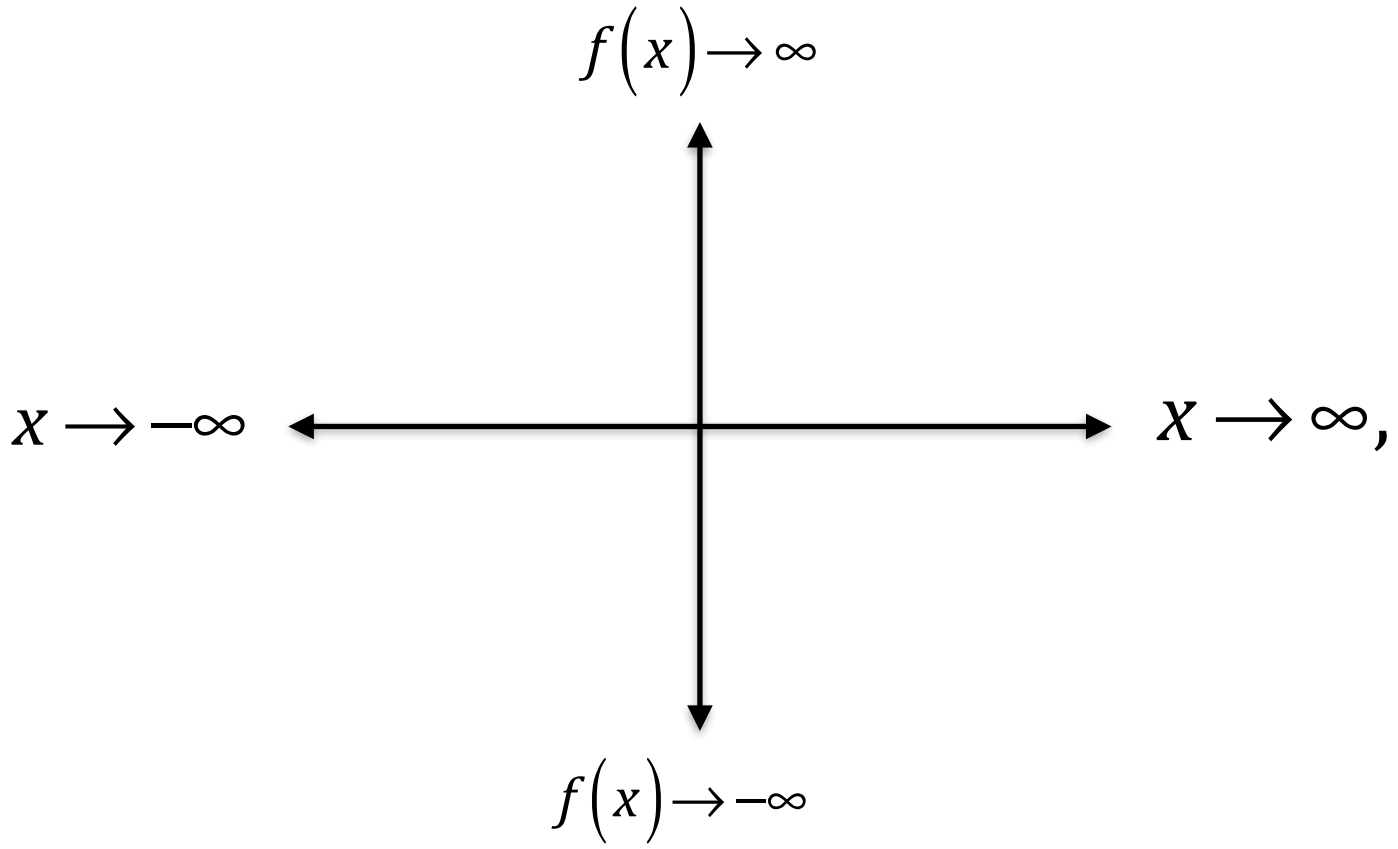
1. What are the basic characteristics of polynomial graphs?

2. how do I use technology to graph polynomial functions?

3. What is end behavior and how can I predict it?

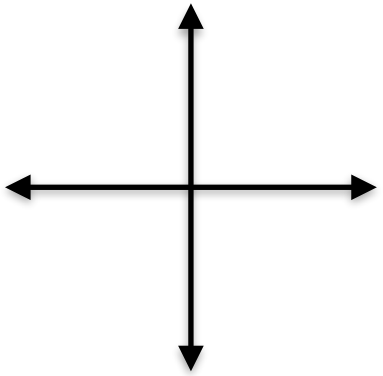
Vocabulary

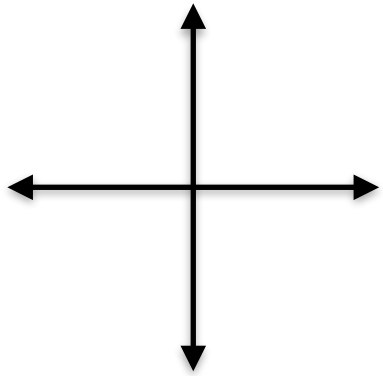
1. End Behavior: as “x” gets VERY large in a positive or negative direction, what does the “y” value do?



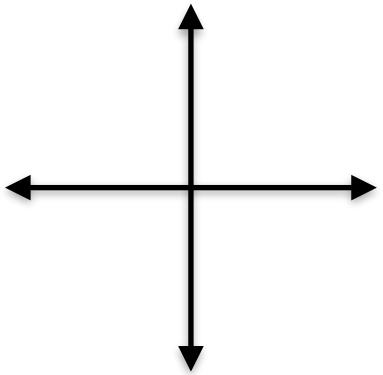
Prerequisite Skills with Practice

Calculator discovery: Monomials of higher degrees…

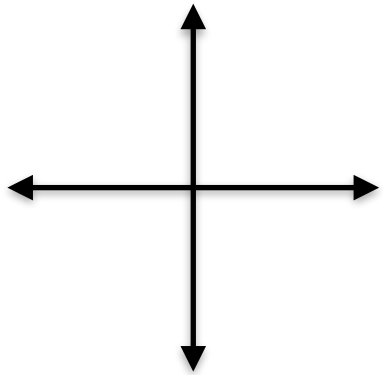




$f(x)=x^2$



$g(x)=-x^2$



$h(x)=x^3$

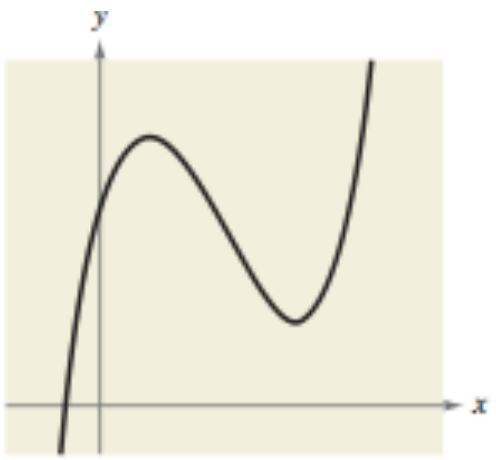
$m(x)=-x^3$

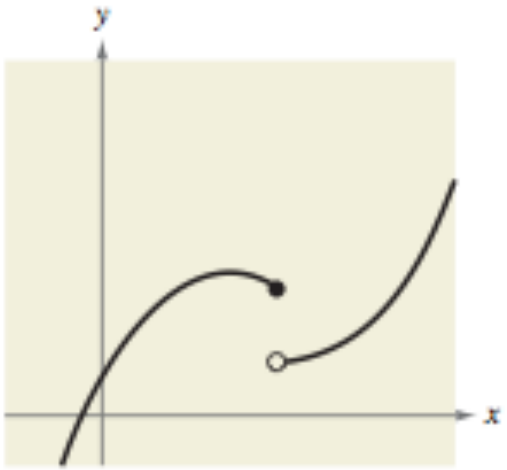
Properties of Polynomial graphs

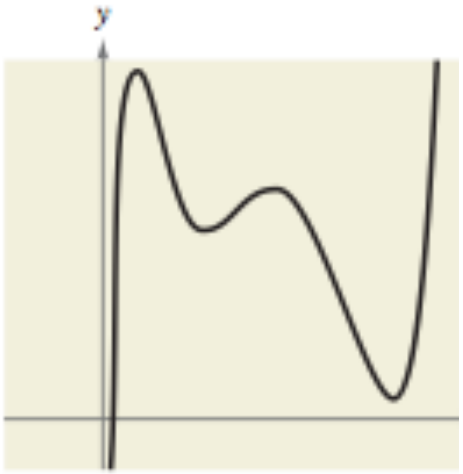
They are always Continuous, that is – they have no breaks

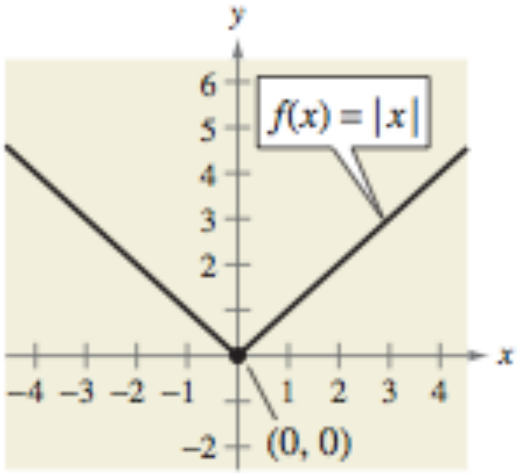
They are smooth and rounded – no sharp turns

They have predicable end behavior.









End Behavior

$$f(x) = Ax^n \ldots\ldots$$

Leading Coefficient Test

If “A” is Positive and “n” is even…

If “A” is Positive and “n” is odd…

If “A” is Negative and “n” is even…

If “A” is Negative and “n” is odd…

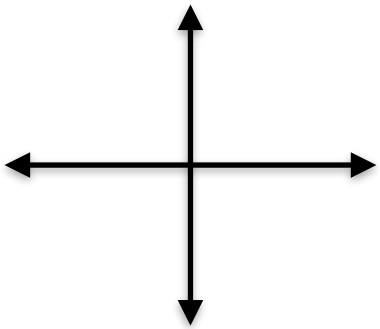
Using the Leading Coefficient Test.

Describe the end behavior of the following functions.Check your description using technology.

$f(x)=-x^3+4x$

As $x\to\infty$, $f(x)\to$ ___

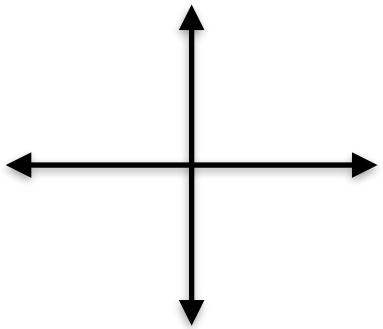
As $x\to-\infty$, $f(x)\to$ ___



$g(x)=4x^4+4x+1$

As $x\to\infty$, $g(x)\to$ ___

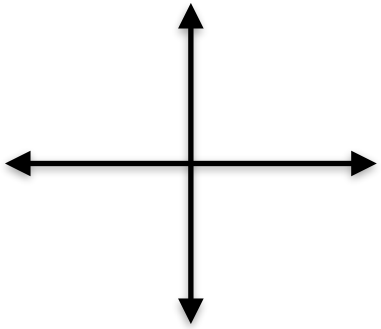
As $x\to-\infty$, $g(x)\to$ ___



$h(x)=-3x^4+4x+1$

As $x\to\infty$, $h(x)\to$ ___

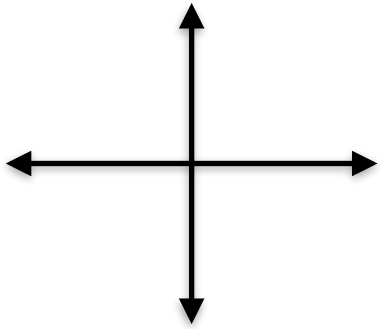
As $x\to-\infty$, $h(x)\to$ ___



$l(x)=3x^3+x$

As $x\to\infty$, $l(x)\to$ ___

As $x\to-\infty$, $l(x)\to$ ___



THE END

Visit PlottsMath for assignment details