

5.1 Polynomial Functions

- a. I can classify polynomials (by degree, number of terms).
 b. I can analyze the graphs polynomial functions and describe end behavior

p.76-77 Polynomial Functions

5.1

p. 76

Warm-up

Write the following expression in standard form:

$$\cancel{8x^4} - \cancel{3x} + \cancel{3x^6} + \cancel{9x^3} - 12$$

$$3x^6 + 8x^4 + 9x^3 - 3x - 12$$

p. 77

Polynomials



$$f(x) = 6x^4 - 2x^3 + x^2 - 3x + 10$$

The function shown above is a 4th degree polynomial and has 5 terms.

1. $f(x) = 3x^3 - 2x^2 + 7x - 1$

Degree 3
 Number of terms 4



2. $f(x) = -x^2 + 3x + 100$

Degree 2
 Number of terms 3

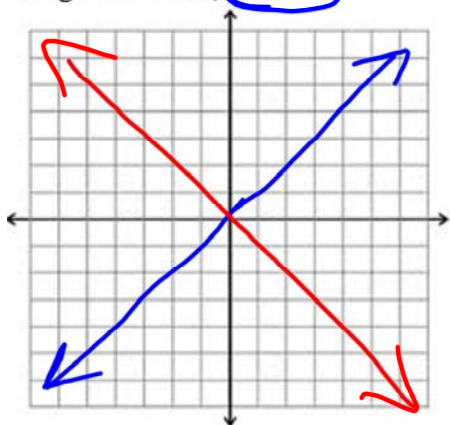
p. 77

Sketch 2 graphs on each plane. One that has a positive leading coefficient and one that has a negative leading coefficient.

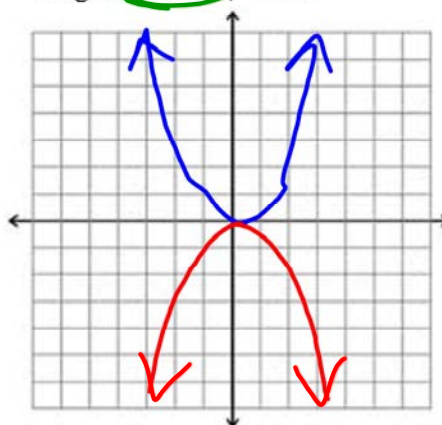
Sketches of polynomial functions

Positive Leading Coefficient 
 Negative Leading Coefficient 

Parent: $f(x) = x^1$
 Degree: Even / Odd



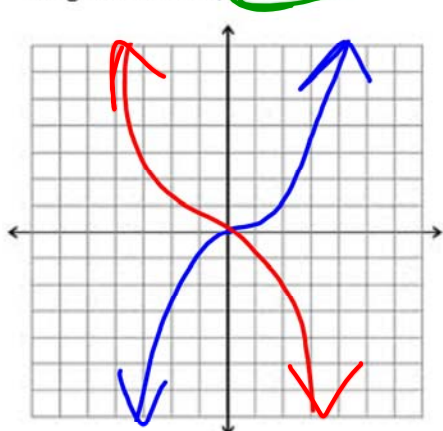
Parent: $f(x) = x^2$
 Degree: Even / Odd



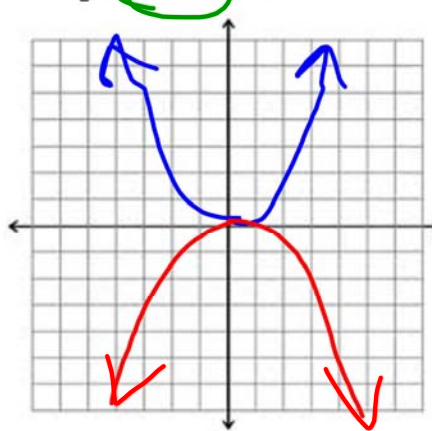
p. 77

Sketch 2 graphs on each plane. One that has a positive leading coefficient and one that has a negative leading coefficient.

Parent: $f(x) = x^3$
 Degree: Even / Odd



Parent: $f(x) = x^4$
 Degree: Even / Odd



p. 76

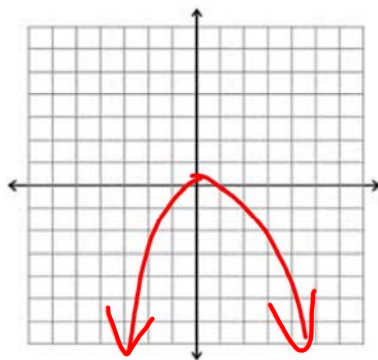
Practice.

Sketch a graph based on the information provided. Then identify the end behavior.

1.

Degree: Even

Leading Coefficient: Negative



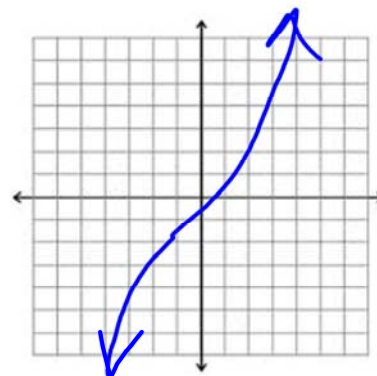
End Behavior:

$$\begin{aligned} x \rightarrow +\infty & \quad f(x) \rightarrow \underline{-\infty} \\ x \rightarrow -\infty & \quad f(x) \rightarrow \underline{-\infty} \end{aligned}$$

2.

Degree: Odd

Leading Coefficient: Positive



End Behavior:

$$\begin{aligned} x \rightarrow +\infty & \quad f(x) \rightarrow \underline{+\infty} \\ x \rightarrow -\infty & \quad f(x) \rightarrow \underline{-\infty} \end{aligned}$$

Assignment:

5.1 Polynomial Functions Homework Day 1