GRAPHS OF POLYNOMIAL FUNCTIONS

Make a chart:

Degree	1	2	3	4	5
# of "turns"					
Positive Leading Coefficient					
Negative Leading Coefficient					

Conclusions:
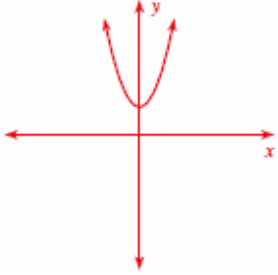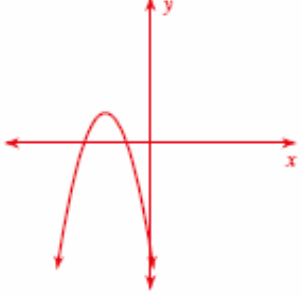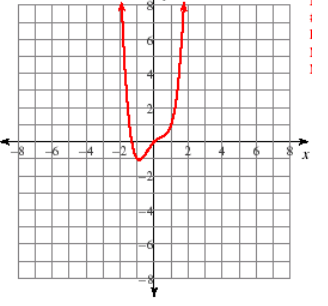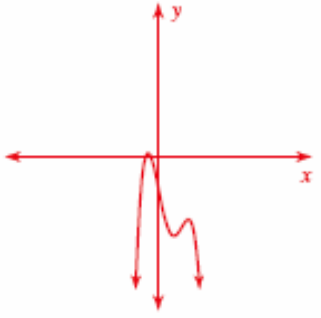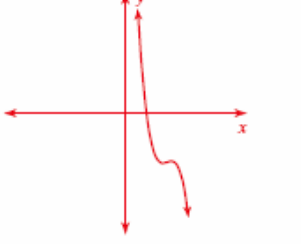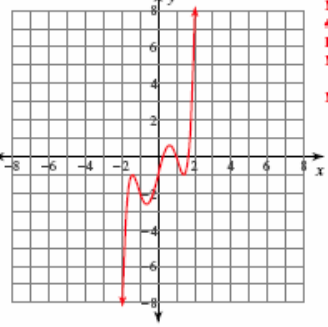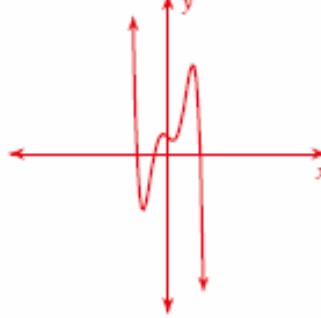
# of Turns:

ODD DEGREE   EVEN DEGREE
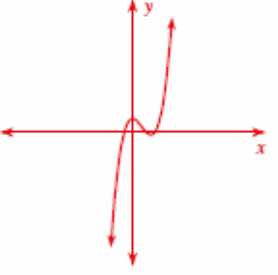
	Positive L.C.	Negative L.C.
Odd Degree	As $x \to -\infty$ $f(x) \to$ _____ As $x \to +\infty$ $f(x) \to$ _____	As $x \to -\infty$ $f(x) \to$ _____ As $x \to +\infty$ $f(x) \to$ _____
Even Degree	As $x \to -\infty$ $f(x) \to$ _____ As $x \to +\infty$ $f(x) \to$ _____	As $x \to -\infty$ $f(x) \to$ _____ As $x \to +\infty$ $f(x) \to$ _____

Describe the end behavior and the number of turns for each graph below:

Ex 1: $f(x) = x^2 + 2$	Ex 2: $f(x) = -x^2 - 6x - 7$	Ex 3: $f(x) = x^4 - x^2 + x$	Ex 4: $f(x) = -x^4 + 3x^3 - 2 - 5x$
Ex 5: $f(x) = x^3 - 2x^2 + 1$	Ex 6: $f(x) = -x^3 + 10x^2 - 33x + 32$	Ex 6: 5) $f(x) = x^5 - 4x^3 + 4x - 1$	Ex 8 $f(x) = -x^5 + 4x^3 - x + 1$

What can you generalize about the end behavior and its function?

What can you generalize about the number of turns and its function?

Sketching a Graph of Polynomials

The following information is needed for sketching a graph of any polynomials:

Odd or even degree
End behavior
How many turns (degree – 1)

Ex 9: $f(x) = -x^2 - 6x - 7$ 　　　　　　　　Ex 10: $f(x) = x^3 - 2x^2 + 1$

Ex 11: $f(x) = -x^5 + 4x^3 - x + 1$ 　　　　Ex 12: $f(x) = x^4 - 3x^3 - 2 - 5x$

Ex 13: $f(x) = x^4 + 8x^3 + 4x^2 + 2$ 　　　Ex 14: $f(x) = x^3 + 3x^2 - x - 3$

Ex 15: $f(x) = x^2 - 8x + 2$