Concepts of Algebra 2 Notes   **Section 5-1: Polynomial Functions**

*Objectives:

*<u>monomial</u>:

*<u>degree of a monomial</u>:

*<u>polynomial</u>:

*<u>degree of a polynomial</u>:

*Standard Form of a Polynomial Function

*Degree	*Name Using Degree	*Polynomial Example	*Number of Terms	*Name Using Number of Terms

Got It? **1.** Write each polynomial in standard form. What is the classification of each by degree? by number of terms?

a. $3x^3 - x + 5x^4$ **b.** $3 - 4x^5 + 2x^2 + 10$

*<u>turning points</u>:

*<u>end behavior</u>:

*A function is *increasing* …

*A function is *decreasing* …

*Polynomial Functions – Turning Points / End Behavior

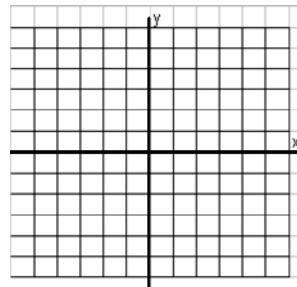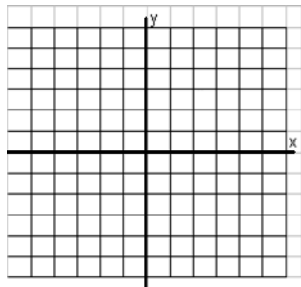| *End Behavior of a Polynomial Function with Leasing Term ax^n		
	n Even (n ≠ 0)	*n* Odd
a Positive		
a Negative		

*Typically, the graph of a polynomial function of degree *n* (*n* ≥ 1) has …

Got It? **2.** Consider the leading term of $y = -4x^3 + 2x^2 + 7$. What is the end behavior of the graph?

Got It? **3.** What is the graph of each cubic function? Describe the graph.

    a. $y = -x^3 + 2x^2 - x - 2$ **b.** $y = x^3 - 1$

*If the first differences are constant →
*If the second differences (but not the first) are constant →
*If the third differences (but not the second) are constant →

Got It? **4. a.** What is the degree of the polynomial function that generates the data shown at the right?

x	y
−3	23
−2	−16
−1	−15
0	−10
1	−13
2	−12
3	29

Inclass: p. 285 #12, 22, 36, 38
Homework: p. 285 #9-39(odd)
Interactmath: #10, 17, 23, 27, 28, 32, 35, 37, 39

*Objective:

Transformations $y = f(x) \quad \rightarrow \quad y = af(x-h)+k$

Got It? 1. What is an equation of the graph of $y = x^3$ under a vertical stretch by the factor 2 followed by a horizontal translation 3 units to the left and then a vertical translation 4 units down?

Inclass: p. 343 #10, 12
Homework: p. 343 #7, 9, 11
Interactmath: #7