8 Algebra CC Key HW# 8

FLIP VIDEO LESSON (rmsalgebra.weebly.com) Polynomials

Polynomial Expression

- a term or a **sum/difference** of terms involving variables raised to a whole number exponent
- no variables can appear in the denominator

Polynomials		Not Polynomials	
$4x^2$	$3x^3 - 8$	$w^{-3} + 1$	$2x^3 - x^2 + \frac{1}{x}$
$5x^2 + 2x - 14$	$\frac{4}{5}x^2 - \frac{1}{2}x + \frac{2}{3}$	$6x^{2/3} + 5x - 8$	

Classifying Polynomials

	Definition	Example
Monomial	A polynomial with exactly 1 term	$3x$, x^2y^2
Binomial	A polynomial with 2 terms	$2x^2 + 4$
Trinomial	A polynomial with 3 terms	$5x^3 - \frac{1}{2}x + 6$
Polynomial	A polynomial with 1 or more terms	$-x^3 + 3x^2 - 16x - 5$

Degree

Degree of a Monomial	Degree of a Polynomial in One Variable
• the sum of the exponents of the variables in the monomial •	• the degree of the monomial term with the highest exponent. • Note: the polynomial must be simplified first.
a) $7x \Rightarrow 1$ b) $7y^6 \Rightarrow 6$	a) $3x^2 + x^7 \Rightarrow x^7 + 3x^2 \Rightarrow$ degree: 7
c) $3x^4 \Rightarrow 4$ d) $7x^0 \Rightarrow 0$	b) $5x + 4x^3 + 9 \Rightarrow 4x^3 + 5x + 9 \Rightarrow$ degree: 3

* $x^0 = 1$

Standard Form of a Polynomial in One Variable

A polynomial written in standard form is written in descending order beginning with the highest degree monomial.

Write the following polynomial in standard form.

$4a^4 - 5 + a^2 - 7a^3 + 2a^2 + 6a^5 + 8 + 12a^8 \Rightarrow 12a^8 + 6a^5 + 4a^4 + 7a^3 + 3a^2 + 3$

Leading term	Leading coefficient	Constant term
• the term with the highest degree. • first term when it is in standard form.	• coefficient of the leading term	• any term with no variables in a simplified expression.
$12a^8$	12	3