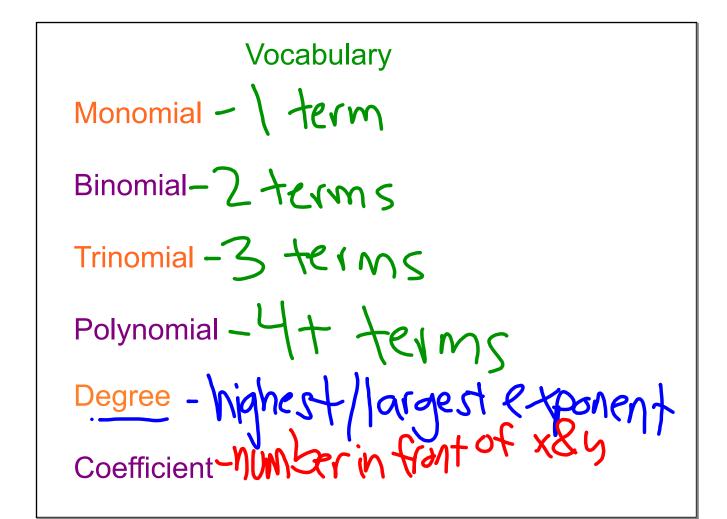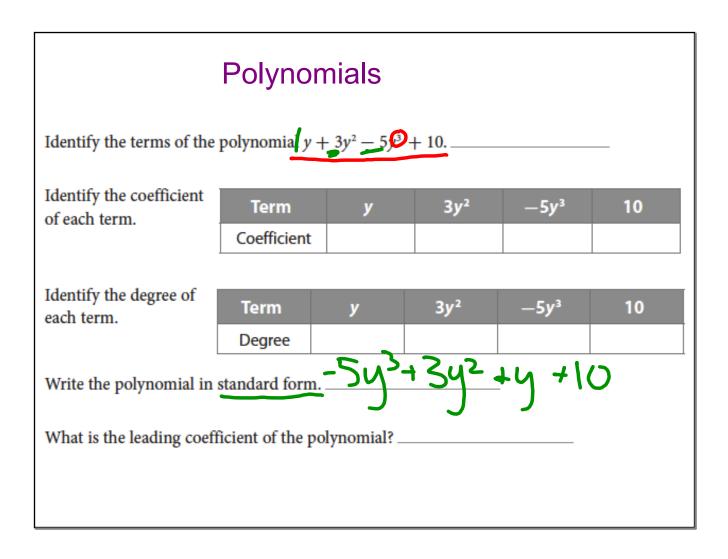# 7-1 Operations with Polynomials

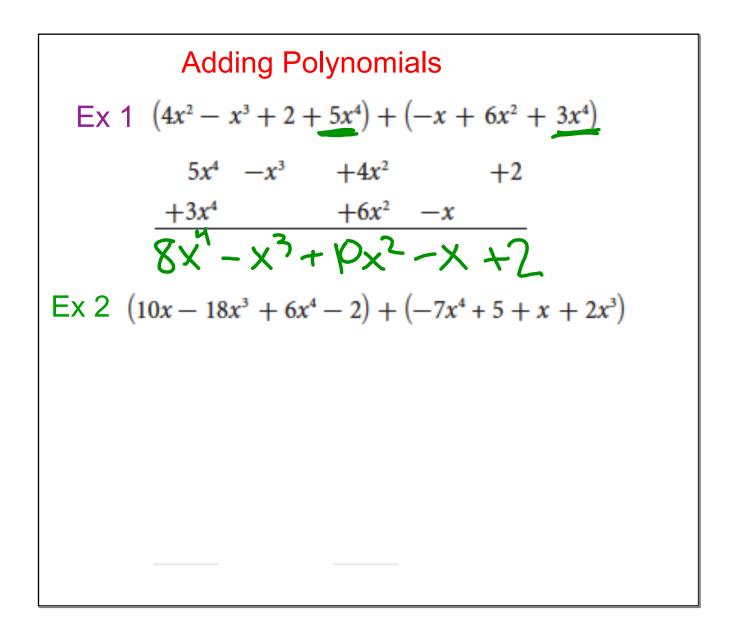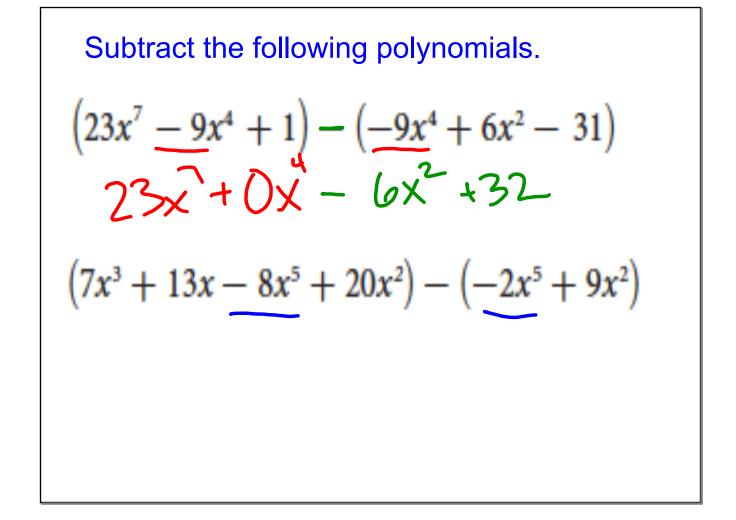Objectives:

- I can identify the parts of a polynomial

- I can perform operations with polynomials including addition, subtraction, and multiplication

Vocabulary

Monomial — 1 term

Binomial — 2 terms

Trinomial — 3 terms

Polynomial — 4+ terms

Degree — highest/largest exponent

Coefficient — number in front of x & y

Polynomials

Identify the terms of the polynomial $y + 3y^2 - 5y^3 + 10$. _____

Identify the coefficient of each term.

Term	y	$3y^2$	$-5y^3$	10
Coefficient				

Identify the degree of each term.

Term	y	$3y^2$	$-5y^3$	10
Degree				

Write the polynomial in standard form. $-5y^3 + 3y^2 + y + 10$

What is the leading coefficient of the polynomial? _____

Adding Polynomials

Ex 1 $\left(4x^2 - x^3 + 2 + \underline{5x^4}\right) + \left(-x + 6x^2 + \underline{3x^4}\right)$

$$
\begin{array}{lllll}
5x^4 & -x^3 & +4x^2 & & +2 \\
+3x^4 & & +6x^2 & -x & \\
\hline
\end{array}
$$

$8x^4 - x^3 + px^2 - x + 2$

Ex 2 $\left(10x - 18x^3 + 6x^4 - 2\right) + \left(-7x^4 + 5 + x + 2x^3\right)$

Subtract the following polynomials.

$$(23x^7 - 9x^4 + 1) - (-9x^4 + 6x^2 - 31)$$

$$23x^7 + 0x^4 - 6x^2 + 32$$

$$(7x^3 + 13x - 8x^5 + 20x^2) - (-2x^5 + 9x^2)$$

$$\left(17x^4 + 8x^2 - 9x^7 + 4 - 2x^3\right) + \left(11x^3 - 8x^2 + 12\right)$$

$$\left(4x^3 + 3x - x^2 - 5\right) - \left(7 + 2x^3 - 6x^2\right)$$

$(x + 2) \cdot (1 - 4x + 2x^2)$

Find the product by multiplying horizontally.

$x - 4x^2 + 2x^3 + 2 - 8x + 4x^2$

$(x - 6)(3 - 8x - 4x^2)$

Multiplying with a table

$$(x^2+3x-5)(x^2-x+1)$$

	x^2	-x	1
x^2			
+3x			
-5			

It's all you!

$$(3 + 2x)(4 - 7x + 5x^2)$$