5.3 Naming/add/subtract polynomials

NAMING A MONOMIAL:

Monomial – any SINGLE term. It can be a #, variable or both together.

The Degree of a Monomial is the sum of the powers of the variables. IT DOES NOT include the power of the numbers.

$4x^6y^2$ Degree is 8. IT DOES NOT include the power of the numbers.

4 It is a #. There is no variable so its degree = 0.

x^2y Degree is 3.

It is not a polynomial if the exponent is negative or in the denominator:

$\frac{2}{x}$ $\quad 5^2 x^{-3}$

not polynomials

NAMING A POLYNOMIAL:

Polynomial - More than one monomial in an expression or equation

Example: $2x^2 - 7x^1 - 4$ degree 2

2 1 0

Standard form of a polynomial – writing the polynomial from greatest degree to least degree.

A # by itself is called a constant and has degree zero. The -4 in the example is the constant.

Degree of a polynomial is the monomial with the highest degree. The degree is 2 in the example.

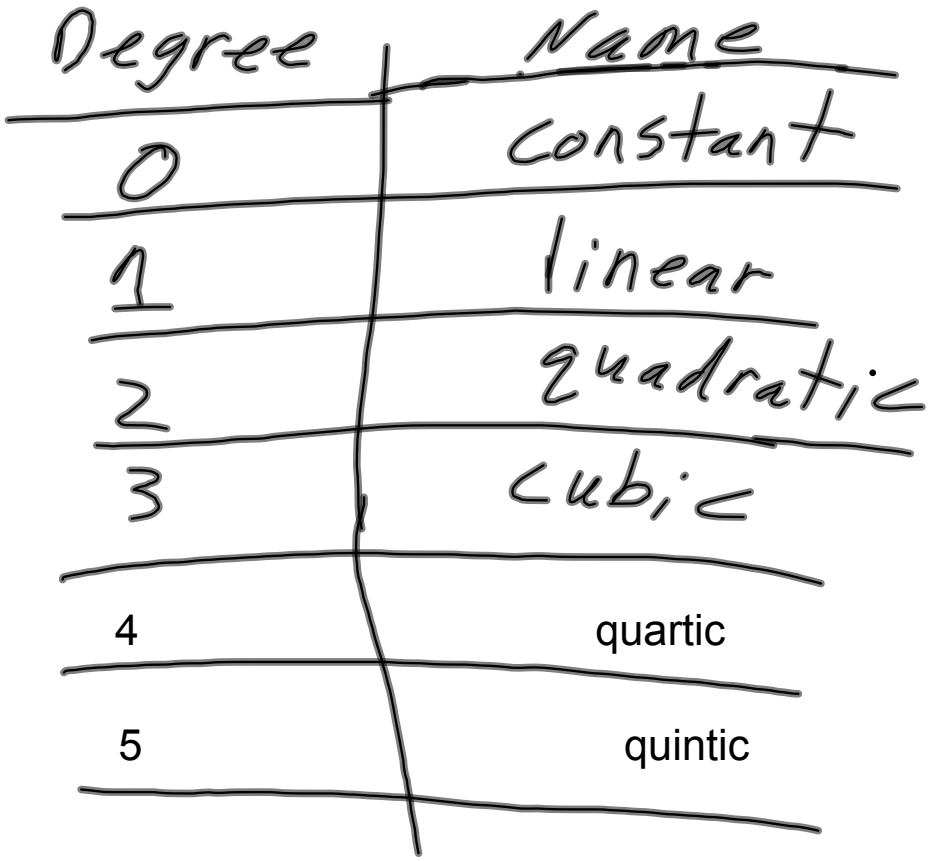
There are 2 parts to name a Polynomial:

Degree + # of terms

$4^2x^4 + 2x^3y^2 + 5x^2 - 6$

Degree
Monomials 4 5 2 0

Degree
Polynomial 5


Degree
Name
0
constant
1
linear
2
quadratic
3
cubic
4
quartic
5
quintic

# terms	name
1	monomial
2	binomial
3	trinomial
4	polynomial with 4 terms
5	polynomial with 5 terms

Write in standard form and name:

@ $-7x+5x^4$

ⓑ $x^2-4x+3x^3+2x$

© $4x-6x+5$

ⓓ $(x+1)^3$

$-7x + 5x^4$ 2 terms

1 4

Degree of polynomial = 4

$5x^{4}, -7x$

4 1

quartic binomial

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

combine like terms

$3x^3 + x^2 - 2x$

(3) (2) (1)

3 terms

Degree polynomial = 3

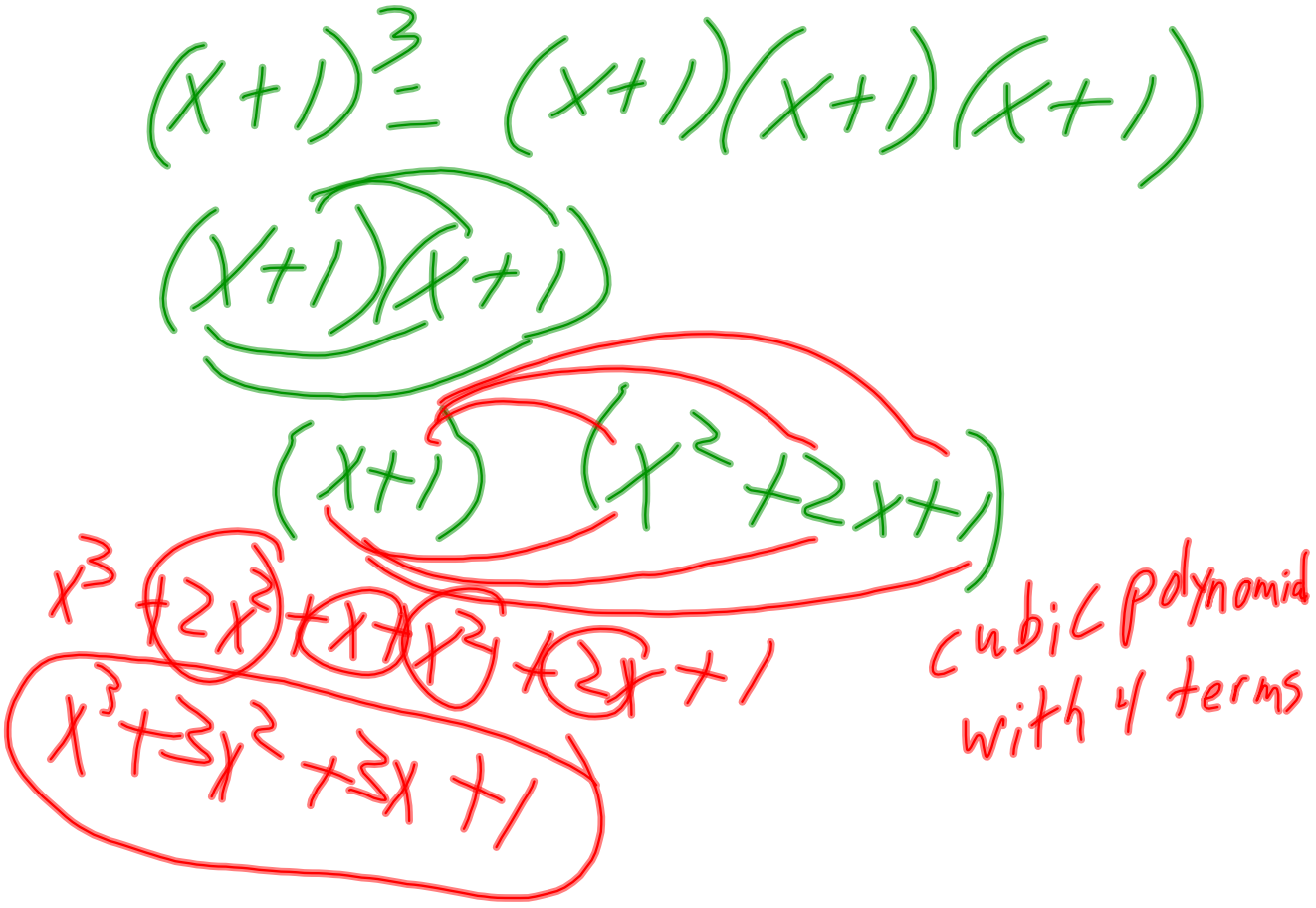
cubic trinomial

(e) $4x - 6x + 5$

$-2x + 5$

1 0

Linear binomial


$(x+1)^3 = (x+1)(x+1)(x+1)$
$(x+1)(x+1)$
$(x+1)(x^2+2x+1)$
$x^3+2x^2+x+x^2+2x+1$
x^3+3x^2+3x+1
cubic polynomial with 4 terms

$7 - 6 + 4 - 2 = 3$

constant monomial

If $P(x) = 3x^2 - 2x - 5$

find $P(1)$ Evaluate $x = 1$

$P(1) = 3(1)^2 - 2(1) - 5$

$3 - 2 - 5 = -4$

find $P(-2) = 3(-2)^2 - 2(-2) - 5$

$= 12 + 4 - 5 = 11$

(a) x^2+x

(b) $x^2(x') = x^{2+1} = x^3$

$x^3 + x^5 = x^5 + x^3$

Add/Subtract - combine like terms only. It is not x^8

$x^3(x^5)$ = multiply so add exponents = x^8

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

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

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

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

$5x^4 + 3x^2 - 2x + 4$

(3a) $5x^4 - 1(3x^2 - 2x + 4)$

$5x^4 - 3x^2 + 2x - 4$

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