

Ch. 3-1 Polynomials

Vocabulary: monomial, polynomial,
degree of a monomial, degree of a polynomial,
leading coefficient, binomial, trinomial, standard
form
Pascal's Triangle, binomial expansion

Adding and Subtracting Polynomials

Standard form of a polynomial
⇒ descending order by degree

(EX) $5x^3 + 8x^2 + 3x - 17$
pg 150
degree →
3 2 1 0

The degree of the four-term
polynomial is 3 NOT 6
↑

NEVER ADD
DEGREES OF
MONOMIAL TERMS

Ch. 3-2 Multiplying Polynomials

(EX1) $3x^2(x^3+4)$
 PG 158 Monomial binomial

(EX) $(2x+4)(-3x+6)$
 Binomial binomial

(EX2) $(x-2)(1+3x-x^2)$
 PG 158

Tip:
 Vertical is
 best!!

(EX4) $(x+y)^3$
 PG 160

Pascal's Triangle

(see pg 157)

Each new row's numbers are the sum of the 2 diagonal numbers above it — the outside numbers are always 1

row 0			1		1			
row 1				1		1		
row 2			1	2	2	1		
row 3		1		3		3	1	
row 4	1		4		6		4	1

	1	5	10	10	5	1
1	6	15	20	15	6	1
1	6	15	20	15	6	1
1	6	15	20	15	6	1

STUDY TABLE - Pg 160

Ex 5
Pg 161

Expanding A binomial
using Pascal's Triangle

$$(y-3)^4$$

4th power = row 4 $\Rightarrow$ 1 4 6 4 1

$$(1)y^4$$

end term

$$(1)(-3)^4$$

↑
END TERM

$$4y^3(-3)^1$$

$$6y^2(-3)^2$$

$$4y^1(-3)^3$$

$$y^4 + 4y^3(-3) + 6y^2(9) + 4y(-27) + 81$$

$$y^4 - 12y^3 + 54y^2 - 108y + 81$$

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

$$\underline{\underline{6x^2 + 2x}} - \underline{\underline{3x^2 + 4x}} - 3$$

$$\boxed{3x^2 + 6x - 3}$$

(Ex 1)

pg 158

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

$$\boxed{3x^5 + 12x^2}$$

(Ex)

$$(2x + 4)(-3x + 6)$$

$$-6x^2 + 12x - 12x + 24$$

$$\boxed{-6x^2 + 24}$$

Ex 2
Pg 158

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

$$\begin{array}{r} x + 3x^2 - x^3 \\ -6x + 2x^2 \quad -2 \\ \hline -5x + 5x^2 - x^3 - 2 \\ \boxed{-x^3 + 5x^2 - 5x - 2} \end{array}$$

Ex 4
Pg 160

$$(x+y)^3 = (x+y)(x+y)(x+y)$$

$$(x^2 + 2xy + y^2)(x+y)$$

$$\begin{array}{r} x^3 + 2x^2y + xy^2 \\ 1x^2y + 2xy^2 + y^3 \\ \hline 1x^3 + 3x^2y + 3xy^2 + 1y^3 \end{array}$$