Chapter 7 – Exponents

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Review – Combining Like Terms

Terms can ONLY be added if they have exactly the SAME VARIABLES and EXPONENTS.

Examples:

1. $5x + 2 + 6x - 8 - x + 3 + 9x =$ $19x - 3$
2. $3x^2 + 4x - 2 + 6x^2 - 3x - 8 =$ $9x^2 + x - 10$
3. $2m^3 - 6m^3 =$ $-4m^3$
4. $9x^3 - 3x^2 + 2x - 5 + x^3 - 4x^2 + 5x + 8 =$ $10x^3 - 7x^2 + 7x + 3$
5. $-3x^5y^4 + 6x^3y^5 + 2x - x^5y^4 + 2x^3y^5 - 3x =$ $-4x^5y^4 + 8x^3y^5 - x$
6. $7x^3y + 3x^3 + x^3y - x^3 =$ $8x^3y + 2x^3$
7. $5x^4 - 2x^3 + 7x^2 + 6 - 3x^4 - 8x =$ $2x^4 - 2x^3 + 7x^2 - 8x + 6$

Try a, d, f

√ Understanding Check:

a. $3x^2 - 4x + 6 - x^2 - 2x - 1 =$ _____

b. $3y^2 + 4xy + 7y^2 - 5xy =$ _____

c. $9m + 2x - 4 + 2xm + 8x - 9 + 3m + 6xm =$ _____

d. $-3x^3y - 4x^2y + 8xy - 2x^3y + 9x^2y - 5xy =$ _____

e. $7xm^3 - 3m^3 + 2xm^3 - 4xm^3 + 10m^3 - xm^3 =$ _____

f. $8x^7 - 2x^3 + 11x + 5x^3 - 2x + 4x^7 - 3x^3 =$ _____

√ Understanding Check:

a. $3x^2 - 4x + 6 - x^2 - 2x - 1 =$ $2x^2 - 6x + 5$

b. $3y^2 + 4xy + 7y^2 - 5xy =$ $10y^2 - xy$

c. $9m + 2x - 4 + 2xm + 8x - 9 + 3m + 6xm =$ $12m + 8xm + 10x - 13$

d. $-3x^3y - 4x^2y + 8xy - 2x^3y + 9x^2y - 5xy =$ $-5x^3y + 5x^2y + 3xy$

e. $7xm^3 - 3m^3 + 2xm^3 - 4xm^3 + 10m^3 - xm^3 =$ $4xm^3 + 7m^3$

f. $8x^7 - 2x^3 + 11x + 5x^3 - 2x + 4x^7 - 3x^3 =$ $12x^7 + 9x$

Combining Groups of Like Terms

Example 1: Adding Groups of Terms

1. $(4x^2 + 5x - 7) + (6x^2 - 3x - 2) =$ $10x^2 + 2x - 9$

2. $(10x^3 - 7x^2 + 5) + (2x^3 + 6x - 1) =$ $12x^3 - 7x^2 + 6x + 4$

√ Understanding Check:

a. $(6x^3 - 5x^2 - 8x + 3) + (7x^3 + 4x^2 - 7x + 9) =$ $13x^3 - x^2 - 15x + 12$

b. $(9x^2 - 2x - 8) + (3x^2 - 5x + 7) =$ _____

c. $(4x^6 - 3x^2 + 2x - 3) + (8x^3 - x^2 - 6x + 1) =$ $4x^6 + 8x^3 - 4x^2 - 4x - 2$ $4x^6 - 4x^2 + 8x^3 - 4x - 2$

√ Understanding Check:

a. $(6x^3 - 5x^2 - 8x + 3) + (7x^3 + 4x^2 - 7x + 9) =$ $13x^3 - x^2 - 15x + 12$

b. $(9x^2 - 2x - 8) + (3x^2 - 5x + 7) =$ $12x^2 - 7x - 1$

c. $(4x^6 - 3x^2 + 2x - 3) + (8x^3 - x^2 - 6x + 1) =$ $4x^6 + 8x^3 - 4x^2 - 4x - 2$

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Example 2: Subtracting Groups of Terms

Sometimes you need to DISTRIBUTE before you combine like terms.

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

Step 1: DISTRIBUTE THE NEGATIVE

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

Step 2: COMBINE LIKE TERMS

$3x^2 + 8x - 5$

√ Understanding Check:

a. $(3x^2 - 4x + 6) - (x^2 - 2x - 1)$ = _____

b. $(3y^2 + 4xy) - (7y^2 + 5xy)$ = _____

c. $(9m + 2x + 2xm - 4) - (8m - 9x + 6xm)$ = _____

d. $(6x^3 - 5x^2 - 8x + 3) - (7x^3 + 4x^2 - 7x + 9)$ = _____