

# Lesson 1.5 Adding and Subtracting Polynomials.notebook

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Lesson 1.5- SWBAT add and subtract polynomial expressions.

Kickoff- Complete the following:

- 1) Given  $p(x) = x^3 - 3x^2 + 4$  find  $p(-3)$   
 $(-3)^3 - 3(-3)^2 + 4$  L4
- 2) Evaluate  $x^3 - 6x^2 + 2y^2$  when  $x = -2$  and  $y = 5$   
 $(-2)^3 - 6(-2)^2 + 2(5)^2$  18
- 3) Simplify  $\frac{1}{3}[x + 3(2x - 4y)]$   
 $\frac{1}{3}[x + 6x - 12y] \quad \text{Simplifying}$   
 $\frac{1}{3}[7x - 13y]$   
 $\frac{7}{3}x - \frac{13}{3}y$
- 4) Simplify  $x - 8[2x - (3 - x)]$   
 $x - 8[2x - 3 + x]$   
 $x - 8[3x - 3]$   
 $1x - 24x + 24$   
 $-23x + 24$

Polynomials can be added by combining like terms. We can use a horizontal or vertical format for this!

Examples:

- 1) Add  $3x^2 - 7xy - 5$  and  $-x^2 - 3x + 1$   
 $3x^2 - 7xy - 5$  and  $-x^2 - 3x + 1$
- 2) Add  $2x^2 + 4x - 2$  and  $4x + 2$   
 $2x^2 + 4x - 2$  and  $4x + 2$
- 3) Subtract  $(3x^2 - 7xy + y^2) - (-4x^2 + 7xy - 3y^2)$   
 $3x^2 - 7xy + y^2 + 4x^2 - 7xy + 3y^2$   
 $+ 4x^2 - 7xy + 3y^2$   
 $7x^2 - 14xy + 4y^2$
- 4) Subtract  $-2x^2 + 3x + 5$  from  $3x^2 - 7x$   
 $3x^2 - 7x$  from  $3x^2 - 7x$   
 $+ 2x^2 - 3x - 5$   
 $5x^2 - 10x - 5$

Practice: Simplify each of the following polynomials.

- 5) From  $5x - 3y$  subtract  $4x - 2y$   
 $(5x - 3y) - (4x - 2y)$   
 $5x - 3y - 4x + 2y$   
 $x - y$
- 6) Subtract  $6x^3 - 3x + 7$  from  $3x^2 - 5x + 12$   
 $6x^3 - 3x + 7 - 3x^2 + 5x - 12$   
 $6x^3 - 3x^2 + 2x - 5$
- 7) Simplify  $(5x^2 + 2x - 7) + (x^2 - 8x + 12)$
- 8)  $(9r^3 + 5r^2 + 11r) + (-2r^3 + 9r - 8r^2)$

- 9) Subtract  $t^4 - 3t^2$  from  $5t^3 - 9$
- 10)  $(3a^2 + 2a - 2) - (a^2 - 3a + 7)$
- 11)  $(4x^2 + 5x - 3) + (7x^3 - 7x + 1) + (2x - 3x^2 + 4x^3 + 1)$

Directions: Simplify each of the following polynomial expressions.

- 12)  $(12y^2 + 17y - 4) + (9y^2 - 13y + 3)$
- 13)  $(3z^2 + 4z) - (6z^2 - 2)$
- 14)  $(5 - 9a^3) + (4a^2 + 6a - 3)$
- 15)  $(q^2 + 8) - (4q^2 + 1)$

- 16) Subtract  $(-2x^2 + 3x - 1)$  from  $(2x^2 + 3x - 1)$
- 17)  $(3x + 7x^2 - 6) - (5x^2 + x + 9)$
- 18)  $(7z^3 + 4z - 1) + (2z^2 - 6z + 2)$
- 19)  $(6x^3 - 4x^2 + x - 9) - (3x^2 + 7x + 3)$

20) Subtract  $(2s^2 + 10s)$  from  $(-s^3 - 3)$

21)  $(2x^2 + 1) + (x^2 - 2x + 1)$

22)  $(3x + 7x^2 - 6) - (5x^2 + x + 9)$

23)  $(2x^2 + 3x - 1) + (-2x^2 + 3x + 1)$

24)  $(x^2 - 7x + 10) + (2x^2 + 2x - 3) - (3x^2 - 5x + 7)$