

Adding & Subtracting Polynomials

A.) $(-4k^4 + 14 + 3k^2) + (-3k^4 - 14k^2 - 8)$

$$-7k^4 - 11k^2 + 6$$

C.) $(8n - 3n^4 + 10n^2) - (3n^2 + 11n^4 - 7)$

$$8n - 3n^4 + 10n^2 - 3n^2 - 11n^4 + 7$$

$$-14n^4 + 7n^2 + 8n + 7$$

B.) $(-x^4 + 13x^5 + 6x^3) + (6x^3 + 7x^4 - 2x^2)$

$$13x^5 + 6x^4 + 12x^3 - 2x^2$$

D.) $(12a^5 - 6a - 10a^3) - (-2a^5 - 14a^4)$

$$12a^5 - 6a - 10a^3 + 2a^5 + 14a^4$$

$$14a^5 + 14a^4 - 10a^3 - 6a$$

Multiplying Polynomials

E.) $2x(3x^2 - 7x)$

$$6x^3 - 14x^2$$

F.) $(4n - 3)(5n + 2)$

$$20n^2 + 8n - 15n - 6$$

$$20n^2 - 7n - 6$$

G.) $(3y + 4)^2$

$$(3y + 4)(3y + 4)$$

$$9y^2 + 12y + 12y + 16$$

$$9y^2 + 24y + 16$$

H.) $(3t - 2)(4t^2 - 9t + 3)$

$$12t^3 - 27t^2 - 9t - 8t^2 + 18t - 6$$

$$12t^3 - 35t^2 + 9t - 6$$

I.) $(3m^2 + 4m - 2)(2m - 5)$

$$6m^3 - 15m^2 + 8m^2 - 20m - 10m + 10$$

$$6m^3 - 7m^2 - 24m + 10$$

J.) $(7k - 3)(2k^2 - 2k + 7)$

$$14k^3 - 14k^2 + 49k - 6k^2 + 6k - 21$$

$$14k^3 - 20k^2 + 55k - 21$$

Evaluating Polynomials

K.) $f(-3) = -2x^2 + 5x + 11$

$$= -2(-3)^2 + 5(-3) + 11$$

$$= -2(9) - 15 + 11$$

$$= -18 - 4$$

$$= -22$$

L.) $f(m + 3) = x^2 - 4x + 9$

$$(m + 3)^2 - 4(m + 3) + 9$$

$$(m + 3)(m + 3) - 4(m + 3) + 9$$

$$m^2 + 6m + 9 - 4m - 12 + 9$$

$$m^2 + 2m + 6$$

M.) $f(x + y) = x^2 - 2x$

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

$$(x + y)(x + y) - 2(x + y)$$

$$x^2 + 2xy + y^2 - 2x - 2y$$

Operations with Polynomials - Summary

Pretend you are instructing a classmate to do similar problems as above. Answer the questions below in full detail.

1.) When adding and/or subtracting polynomials, how do you know which terms to put together?

2.) When multiplying polynomials, what are the important things to remember? Feel free to use an example to help your explanation.

3.) Describe the general process when asked to evaluate a polynomial.

Challenge:

N.) $(6w^2 + 4w - 3)(3w^3 - 2w + 5w^3)$

$$18w^5 - 12w^3 + 30w^5 + 12w^4 - 8w^2 + 20w^4 - 9w^3 + 6w - 15w^3$$

$$48w^5 + 32w^4 - 36w^3 - 8w^2 + 6w$$

O.) $(2m - 3)^3 = \underbrace{(2m - 3)(2m - 3)}_{(4m^2 - 6m - 6m + 9)}(2m - 3)$

$$\underbrace{(4m^2 - 12m + 9)}_{(4m^2 - 12m + 9)}(2m - 3)$$

$$8m^3 - 12m^2 - 24m^2 + 36m + 18m - 27$$

$$8m^3 - 36m^2 + 54m - 27$$

$$8m^3 - 36m^2 + 54m - 27$$