

* Write in order from highest to lowest exponent, constant at the end

Unit 1.3: Polynomial Operations

Adding and subtracting polynomials

Anytime we need to add or subtract a polynomial, the big idea is to combine like terms. * Distribute negative if necessary

1) Simplify each expression.

a. $(8p^2 - 7p) - (p - p^2)$

$$\begin{array}{r} 8p^2 - 7p - p + p^2 \\ \hline 9p^2 - 8p \end{array}$$

c. $(2n - 7) + (2n + 3)$

e. $(6 - 3x^3 - 8x^4) + (5 + 7x^4)$

b. $(5 - 3m^2) - (6 - 8m^2)$

$$\begin{array}{r} 5 - 3m^2 - 6 + 8m^2 \\ \hline 5m^2 - 1 \end{array}$$

d. $(k^3 - 3) + (5 + 6k^3)$

$$\begin{array}{r} k^3 - 3 + 5 + 6k^3 \\ \hline 7k^3 + 2 \end{array}$$

f. $(7p - 7p^4 + 3p^2) - (6p^3 + 1)$

$$7p - 7p^4 + 3p^2 - 6p^3 - 1$$

$$\begin{array}{r} -7p^4 - 6p^3 + 3p^2 + 7p - 1 \end{array}$$

Multiplying polynomials

Multiplying polynomials is another use of the distributive property. This time we will make sure that we distribute each term in the first polynomial to each term in the second polynomial.

Distribute!

No like terms, so rewrite in order

2) Simplify each expression.

a. $(3x + 6)(2x + 6)$

$$\begin{array}{r} 6x^2 + 18x \\ 12x + 36 \\ \hline 6x^2 + 30x + 36 \end{array}$$

c. $(3n - 4)(8n - 2)$

b. $(2v - 4)(3v - 1)$

$$\begin{array}{r} 6v^2 - 2v \\ -12v + 4 \\ \hline 6v^2 - 14v + 4 \end{array}$$

d. $(5b + 1)(7b - 6)$

e. $(3m - 2)(7m^2 - 5m + 2)$

f. $(8n - 6)(5n^2 - n - 1)$

$$\begin{array}{r} 40n^3 - 8n^2 - 8n \\ -30n^2 + 6n + 6 \\ \hline 40n^3 - 38n^2 - 2n + 6 \end{array}$$

Distribute to each term

g. $(4p^2 + 8p + 2)$

h. $(7x^3 - 4x^2 + 1)(4x + 2)$