

1.2 Polynomial Operations

Adding and subtracting polynomials

Anytime we need to add or subtract a polynomial, the big idea is to combine like terms.

* Remember to write answers in standard form

1) Simplify each expression.

a. $(8p^2 - 7p) - (p - p^2)$
 $8p^2 - 7p - p + p^2$
 $9p^2 - 8p$

c. $(2n - 7) + (2n + 3)$
 $2n - 7 + 2n + 3$
 $4n - 4$

e. $(6 - 3x^3 - 8x^4) + (5 + 7x^4)$
 $6 - 3x^3 - 8x^4 + 5 + 7x^4$
 $-x^4 - 3x^3 + 11$

b. $(5 - 3m^2) - (6 - 8m^2)$
 $5 - 3m^2 - 6 + 8m^2$
 $5m^2 - 1$

Subtraction is like distributing a negative

d. $(k^3 - 3) + (5 + 6k^3)$
 $k^3 - 3 + 5 + 6k^3$
 $7k^3 + 2$

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

If you're adding, you can drop the parentheses & combine like terms

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: multiply to each term

2) Simplify each expression.

a. $(3x + 6)(2x + 6)$
 $6x^2 + 18x + 12x + 36$
 $6x^2 + 30x + 36$

c. $(3n - 4)(8n - 2)$
 $24n^2 - 6n + 32n + 8$
 $24n^2 + 26n + 8$

e. $(3m - 2)(7m^2 - 5m + 2)$
 $21m^3 - 15m^2 + 6m - 14m^2 + 10m - 4$
 $21m^3 - 29m^2 + 16m - 4$

g. $(7x^3 - 4x^2 + 1)(4x + 2)$
 $28x^4 + 14x^3 - 16x^3 - 8x^2 + 4x + 2$
 $28x^4 - 2x^3 - 8x^2 + 4x + 2$

b. $(2v - 4)(3v - 1)$
 $6v^2 - 2v - 12v + 4$
 $6v^2 - 14v + 4$

d. $(5b + 1)(7b - 6)$
 $35b^2 - 30b + 7b - 6$
 $35b^2 - 23b - 6$

f. $(8n - 6)(5n^2 - n - 1)$
 $40n^3 - 8n^2 - 8n - 30n^2 + 6n + 6$
 $40n^3 - 38n^2 - 2n + 6$

* h.o. $(3x + 4)^2$ means it is multiplied by itself, so we have to write it out twice.

$9x^2 + 12x + 12x + 16$
 $9x^2 + 24x + 16$