Polynomial Review

Simplify.

a) $(3x^2 + 23x - 10) + (4x^2 + 12x + 4)$

$= 3x^2 + 23x - 10 + 4x^2 + 12x + 4$

$= 7x^2 + 35x - 6$

Learning Goals

1. To understand that to simplify an expression, you must expand all brackets first and then collect like terms.

2. To understand that expanding brackets may change the exponent on the variables.

3. To understand that collecting like terms does not change the exponent on the variables.

2.6 Simplifying Polynomial Expressions

Rules for Simplifying Polynomial Expressions

1. Expand the bracket.

2. Collect like terms.

Example One

Expand and simplify.

$$2(3x + 1) - 3(x - 4)$$

1. $6x + 2 - 3x + 12$

2. $3x + 14$

Example Two

Expand and simplify.

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

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

2. $12x^5-6x^4+18x^3-x^5-5x^4+4x^3+7x^5$

3. $18x^5-11x^4+22x^3$

Example Three

Determine the missing factor.

$$(4x^2 - 3x + 2) + (x^2 + 9x + 1) = ?(x^2 + 2x + 1)$$

Hint: Simplify the left-hand side first.

LS

$4x^2-3x+2+x^2+9x+1$

$3x^2+6x+3$ (LS)

RS

(3) $?(x^2+2x+1)$ (RS)

We know LS = RS

$?=3$

Complete: p. 125 - 127 #2, 5ace, 6 - 8.

2a

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

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

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