## Lesson 7-5

**Example 1 Add Polynomials**

**Find each sum.**

**a. (*r*2 + 11 + 7*r*) + (–2*r* + 10 + 8*r*2)**

**Horizontal Method**

(*r*2 + 11 + 7*r*) + (–2*r* + 10 + 8*r*2)

= (*r*2 + 8*r*2) + (7*r* + (–2*r*)) + (11 + 10) Group like terms.

= 9*r*2 + 5*r* + 21 Combine like terms.

## Vertical Method

Align like terms in columns and add like terms together.

*r*2 + 7*r* + 11 Align and combine like terms.

(+) 8*r*2 + (–2*r*) + 10 9*r*2 + 5*r* + 21

# Example 2 Subtract Polynomials

## Find each difference.

**a. (*n*3 + 3*n* – 9) – (*n* – 2*n*3 + 1)**

**Horizontal Method**

Subtract *n* – 2*n*3 + 1 by adding its additive inverse. (*n*3 + 3*n* – 9) – (*n* – 2*n*3 + 1)

= (*n*3 + 3*n* – 9) + (–*n* + 2*n*3 – 1) Change to addition (change the signs inside poly)

= (*n*3 + 2*n*3) + [3*n* + (–*n*)] + [– 9 + (–1)] Group like terms.

= 3*n*3 + 2*n* – 10 Combine like terms.

## Vertical Method

Align like terms in columns and subtract by adding the additive inverse.

*n*3 + 3*n* – 9 *n*3 + 3*n* – 9

Add the opposite.

(-) –2*n*3 + *n* + 1 (+) 2*n*3 – *n* – 1 3*n*3 + 2*n* – 10

Thus, (*n*3 + 3*n* – 9) – (*n* – 2*n*3 + 1) = 3*n*3 + 2*n* – 10.