

## 4.2 Practice A

In Exercises 1–3, find the sum.

1.  $(-6x^2 + 3x - 7) + (10x^2 + 4x - 2)$
2.  $(10x^4 + 3x^2 - 5x + 4) + (7x^5 - 5x^4 + 2x - 9)$
3.  $(5x^4 + 3x^2 - 6x - 10) + (2x^3 - 7x^2 + 6x + 1)$

In Exercises 4–6, find the difference.

4.  $(4x^3 + 6x^2 - 9x + 1) - (8x^3 + 2x^2 - 5x - 1)$
5.  $(10x^4 - 4x^3 - 7x^2 + 5x + 9) - (2x^4 - 5x^3 - 4x^2 + 9x + 3)$
6.  $(7x^2 + 4x^2 - 2x^2 + 12x + 5) - (6x^4 - 9x^3 + x^2 - 3)$

7. A city is planning a new sports park. The total area (in square feet) of the park is modeled by the expression  $9x^2 + 4x - 5$ . The area of the park designated for soccer fields is modeled by the expression  $2x^2 - 5x + 3$ . Write an expression that models the area of the park that is not designated for soccer fields.

In Exercises 8–11, find the product.

8.  $5x^2(3x^2 + 7x + 6)$
9.  $-2x^4(10x^3 - 9x^2 - 7x + 4)$
10.  $(8x^2 - 3x + 1)(-3x + 2)$
11.  $(-x - 6)(3x^2 + 2x + 9)$

12. Describe and correct the error in performing the operation.

$$\times \begin{array}{r} -3x^3(4x^2 - 5x + 7) = -12x^4 - 15x^3 + 21x^2 \end{array}$$

In Exercises 13–16, find the product of the binomials.

13.  $(x - 1)(x + 4)(x - 3)$
14.  $(x - 6)(x - 9)(x + 2)$
15.  $(x + 3)(2x + 1)(2x - 3)$
16.  $(3x + 5)(x - 4)(4x + 1)$

In Exercises 17–19, find the product.

17.  $(x + 8)(x - 8)$
18.  $(y + 4)^2$
19.  $(2b - 3)^2$

## 4.2 Practice B

In Exercises 1 and 2, find the sum.

1.  $(8x^7 - 6x^2 + 4x^3 - 6x) + (15x^6 + 4x^5 + 3x^3 + 2)$
2.  $(8x^4 - 2x^3 + 9x^2 + 7x + 14) + (6x^4 - 5x^3 - 9x^2 - 11x - 9)$

In Exercises 3 and 4, find the difference.

3.  $(9x^3 + 5x^4 - 9x^2 + 10x) - (12x^3 + 2x^4 - x^2 - 9)$
4.  $(12x^4 - 6x^2 + 2x + 14) - (3x^4 - 5x^3 + 9x + 3)$

In Exercises 5–8, find the product.

5.  $(x^2 - 7x - 2)(x^2 - 3x - 6)$
6.  $(2x^2 + 3x - 1)(-5x^2 - 2x + 4)$
7.  $(4x^2 - 3x + 6)(x^2 - 2x + 2)$
8.  $(3x^2 - 6x - 5)(x^4 + 2x^2 + 5x)$

9. Describe and correct the error in performing the operation.

$$\times \begin{array}{r} 4x^2(3x^4 - 2x^3 + 7) = 12x^8 - 8x^6 + 28x^2 \end{array}$$

In Exercises 10–13, find the product of the binomials.

10.  $(x - 3)(2x + 2)(3x - 1)$
11.  $(2x + 3)(x - 5)(4x + 1)$
12.  $(2x - 1)(3 - 2x)(4x + 5)$
13.  $(5 - 2x)(2 - x)(4x + 3)$

In Exercises 14–16, find the product.

14.  $(3x + 5)(3x - 5)$
15.  $(6t + 7)^2$
16.  $(pq + 2)^2$

17. A rectangular pool has a level floor. The length of the pool is  $(3x - 1)$  feet, the width of the pool is  $(x + 6)$  feet, and the depth of the pool is  $(x + 6)$  feet.

- a. Write an expression for the volume of the pool as a product of binomials.
- b. Write an expression for the volume of the pool as a polynomial in standard form.

## Answers

### 4.2 Warm Up

1. 7
2.  $-x + 7$
3.  $28m + 21$
4.  $10p$
5.  $-3z^2 - 2z$
6.  $-2m - 4p$

### 4.2 Cumulative Review Warm Up

1.  $\frac{25}{4} \left( x + \frac{5}{2} \right)^2$
2.  $9(z + 3)^2$
3.  $36(w - 6)^3$
4.  $\frac{625}{4} \left( x - \frac{25}{2} \right)^2$
5.  $16(x - 4)^3$
6.  $\frac{729}{4} \left( s + \frac{27}{2} \right)^3$

### 4.2 Practice A

1.  $4x^2 + 7x - 9$
2.  $7x^2 + 5x^4 + 3x^3 - 3x - 5$
3.  $5x^4 + 2x^3 - 4x^2 - 9$
4.  $-4x^3 + 4x^2 - 4x + 2$
5.  $8x^4 + x^3 - 3x^2 - 4x + 6$
6.  $7x^5 - 6x^4 + 13x^3 - 3x^2 + 12x + 8$
7.  $7x^2 + 9x - 8$
8.  $15x^4 + 35x^3 + 30x^2$
9.  $-20x^7 + 18x^6 + 14x^5 - 8x^4$
10.  $-24x^3 + 25x^2 - 9x + 2$
11.  $-3x^3 - 20x^2 - 21x - 54$
12. The negative was distributed incorrectly;  
 $-3x^2(4x^2 - 5x + 7) = -12x^4 + 15x^3 - 21x^2$
13.  $x^3 - 13x + 12$
14.  $x^3 - 13x^2 + 24x + 108$
15.  $4x^3 + 8x^2 - 15x - 9$
16.  $12x^3 - 25x^2 - 87x - 20$
17.  $x^2 - 64$
18.  $y^2 + 8y + 16$
19.  $4p^2 - 12p + 9$

### 4.2 Practice B

1.  $8x^3 + 15x^6 - 2x^3 + x^3 - 6x + 2$
2.  $14x^4 - 7x^2 - 4x + 5$
3.  $-3x^5 + 3x^4 - 8x^2 + 10x + 9$
4.  $9x^4 + 5x^3 - 6x^2 - 7x + 11$
5.  $x^4 - 10x^3 + 13x^2 + 48x + 12$
6.  $-10x^4 - 19x^3 + 7x^2 + 14x - 4$
7.  $4x^5 - 11x^3 + 20x^2 - 18x + 12$
8.  $3x^6 - 6x^5 + x^4 + 3x^3 - 40x^2 - 25x$
9. The exponents were multiplied instead of added;  
 $4x^2(3x^4 - 2x^3 + 7) = 12x^6 - 8x^5 + 28x^2$
10.  $6x^3 - 14x^2 - 14x + 6$
11.  $8x^3 - 26x^2 - 67x - 15$
12.  $-16x^3 + 12x^2 + 28x - 15$
13.  $8x^3 - 30x^2 + 13x + 30$
14.  $9x^2 - 25$
15.  $36t^2 + 84t + 49$
16.  $p^2q^2 + 4pq + 4$
17. a. Sample answer:  $(3x - 1)(x + 6)^2$   
b.  $3x^3 + 35x^2 + 96x - 36$

### 4.2 Enrichment and Extension

1.  $a = 3, b = 4, c = 2$
2.  $a = 1, b = 3, c = 2, d = 5$
3.  $a = 0, b = 2, c = -4, d = 10$
4.  $a = -4, b = 3, c = 5, d = -13$
5.  $a = 7, b = 0, c = 1$
6.  $a = 9, b = -30, c = -5$  or  $a = 9, b = 30, c = 5$