

7.8**Practice A**

In Exercises 1–4, factor the polynomial by grouping.

1. $x^3 - 3x^2 + x - 3$

2. $x^3 - 2x^2 + 9x - 18$

3. $2y^3 - 2y^2 + 3y - 3$

4. $3p^3 + 5p^2 - 12p - 20$

In Exercises 5–10, factor the polynomial completely.

5. $4y^3 - 36y$

6. $3r^2 - 8r + 7$

7. $3t^3 + 12t^2 + 12t$

8. $-6q^3 + 28q^2 + 10q$

9. $5y^5 - 5y^4 - 10y^3$

10. $7x^2 + 21x + 7$

In Exercises 11–14, solve the equation.

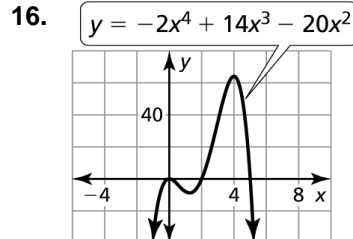
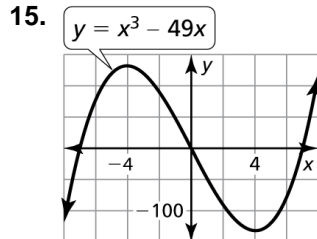
11. $3j^3 + 21j^2 + 30j = 0$

12. $w^4 - 36w^2 = 0$

13. $y^3 - 2y^2 - 9y + 18 = 0$

14. $5t^5 + 5t^4 - 210t^3 = 0$

In Exercises 15 and 16, find the x -coordinates of the points where the graph crosses the x -axis.



17. A rectangular box has a volume of 105 cubic centimeters. The width of the rectangular box is x centimeters, the length is $(2x - 3)$ centimeters, and the height is 3 centimeters.

- Write a polynomial that represents the volume of the rectangular box.
- What are the dimensions of the rectangular box?

In Exercises 18 and 19, factor the polynomial completely.

18. $a^3 - 4a + 3a^2b - 12b$

19. $9g^3 - g - 18g^2h + 2h$

7.8 Practice B

In Exercises 1–4, factor the polynomial by grouping.

1. $a^2 - 3a + ab - 3b$

2. $m^2 + 7mn + 2m + 14n$

3. $t^2 - 4t + tv - 4v$

4. $3x^2 - 4x + 9xy - 12y$

In Exercises 5–10, factor the polynomial completely.

5. $45y^4 - 20y^2$

6. $8w^5 - 48w^4 + 72w^3$

7. $p^3 - 3p^2 - 16p + 48$

8. $12z^2 - 6z + 42$

9. $-21h^4 + 77h^3 + 28h^2$

10. $x^3 + 2x^2 - 49x - 98$

In Exercises 11–14, solve the equation.

11. $p^3 + 2p^2 - 9p - 18 = 0$

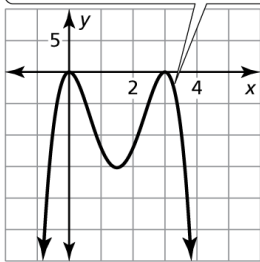
12. $3y^4 + 9y^3 - 120y^2 = 0$

13. $36t - 4t^3 = 0$

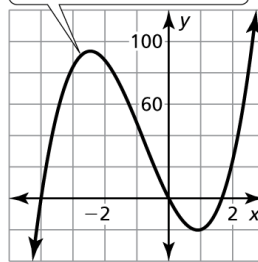
14. $3q^3 - 5q^2 - 27q + 45 = 0$

In Exercises 15 and 16, find the x -coordinates of the points where the graph crosses the x -axis.

15. $y = -3x^4 + 18x^3 - 27x^2$



16. $y = 6x^3 + 14x^2 - 40x$



17. A rectangular box has a volume of $72x$ cubic inches. The width of the rectangular box is x inches, the length is $3x$ inches, and the height is $(3x - 1)$ inches.

- Write a polynomial that represents the volume of the rectangular box.
- What are the dimensions of the rectangular box?

In Exercises 18 and 19, factor the polynomial completely.

18. $5x^2 + 35xy - 2x - 14y$

19. $5p^3 + p^2q - 15pq - 3q^2$