LESSON 5.4 Practice B

For use with pages 353–359

Factor the sum or difference of cubes.

1. $x^3 + 125$

$(x+5)(x^2-5x+25)$

2. $y^3 - 8$

$(y-2)(y^2+2y+4)$

3. $64n^3 - 27$

$(4n-3)(16n^2+12n+9)$

4. $27g^3 + 343$

$(3g+7)(9g^2-21g+49)$

Factor the polynomial in quadratic form.

13. $x^4 - 36$

$(x^2-6)(x^2+6)$

14. $c^4 - 81$

$(c+3)(c-3)(c^2+9)$

15. $x^4 + x^2 - 20$

$(x+2)(x-2)(x^2+5)$

16. $6y^6 - 5y^3 - 4$

$(2y^3+1)(3y^3-4)$

LESSON 5.5 Practice B

For use with pages 362–368

Divide using polynomial long division.

1. $(x^2 + 5x - 14) \div (x - 2)$

$x+7$

2. $(x^2 - 2x - 48) \div (x + 5)$

$x-7-\frac{13}{x+5}$

5. $(8x^3 + 5x^2 - 12x + 10) \div (x^2 - 3)$

$8x+5+\frac{12x+25}{x^2-3}$

Divide using synthetic division.

7. $(x^2 + 7x + 12) \div (x + 4)$ $= x+3$

8. $(x^3 - 3x^2 + 8x - 5) \div (x - 1)$

$x^2-2x+6+\frac{1}{x-1}$

9. $(x^4 - 7x^2 + 9x - 10) \div (x - 2)$

$x^2-5x-1-\frac{12}{x-2}$

A polynomial f and a factor of f are given. Factor f completely.

13. $f(x) = x^3 - 3x^2 - 16x - 12; x - 6$

$(x-6)(x+2)(x+1)$

14. $f(x) = x^3 - 12x^2 + 12x + 80; x - 10$

$(x-10)(x-4)(x+2)$

LESSON 5.6

Practice B

For use with pages 370–378

List the possible rational zeros of the function using the rational zero theorem.

1. $f(x) = x^4 - 6x^3 + 8x^2 - 21$

$\pm 1, \pm 3, \pm 7, \pm 21$

2. $h(x) = 2x^3 + 7x^2 - 7x + 30$

$\pm 1, \pm 2, \pm 3, \pm 5, \pm 6, \pm 10, \pm 15, \pm 30, \pm 1/2, \pm 3/2, \pm 5/2, \pm 15/2$

Find all real zeros of the function.

5. $f(x) = x^3 - 3x^2 - 6x + 8$

$-2, 1, 4$

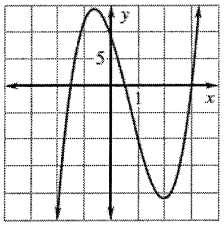
6. $g(x) = x^3 + 4x^2 - x - 4$

$-4, -1, 1$

9. $f(x) = x^3 + 72 - 5x^2 - 18x$ $-4, 3, 6$

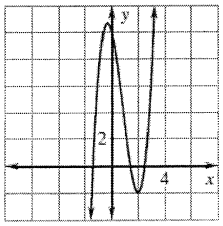
Use the graph to shorten the list of possible rational zeros of the function. Then find all real zeros of the function.

11. $f(x) = 4x^3 - 8x^2 - 15x + 9$



$-3/2, 1/2, 3$

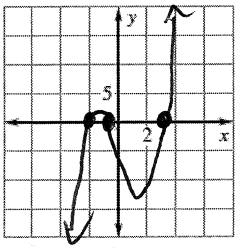
12. $f(x) = 2x^3 - 5x^2 - 4x + 10$



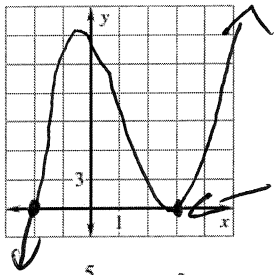
$-\sqrt{2}, \sqrt{2}, 5/2$

Graph the function.

14. $f(x) = (x - 3)(x + 2)(x + 1)$

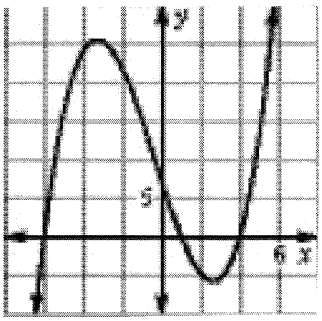


15. $g(x) = (x - 3)^2(x + 2)$

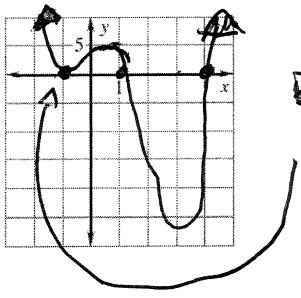


Bounces up because of the squared

16. $h(x) = 0.3(x + 6)(x - 1)(x - 4)$



17. $g(x) = \frac{5}{6}(x + 1)^2(x - 1)(x - 4)$



Bounces because of the squared.