

## **SECTION R.5**

32.  $(2^2b^2) / a^3$ ;  $a \neq 0, b \neq 0$

42.  $b^2$ ;  $b \neq 0$

44.  $1 / (b^4)$ ;  $b \neq 0$

46.  $x^{12}y^6$ ;  $x \neq 0, y \neq 0$

62.  $3ab^2 \sqrt{2a}$

64.  $|(ab) / c| \sqrt{(ab) / c}$ ;  $c \neq 0$

## **SECTION 1.1**

14.  $4x^2 + 5x - 11$

26.  $8a^2 + 22a + 15$

32.  $25x^2 - 40xy + 16y^2$

34.  $9x^6 - 12x^3y^2 + 4y^4$

36.  $x^6 - y^6$

38.  $x^3 - 3x^2y + 3xy^2 - y^3$

62.  $x^2 - 6 + [(26x + 8) / (x^2 + 3x + 1)]$

84. (a) 21 (b) 38 (c)  $48a^4 + 8a^2 + 5$

88. 0, -2, 2,  $-\sqrt{10}$ ,  $\sqrt{10}$

## **SECTION 1.2**

12. Not a perfect square

14.  $(x - 1)^2$

22.  $(2x + 5)(2x - 5)$

24.  $(2x^2 + 25)(2x^2 - 25)$

42.  $2(x + 5)(x - 5)$

44.  $3(x^2 - x + 2)$

56.  $5(x - 9)(x - 1)$

68.  $(x - 2)(x^2 + 2x + 4)$

70.  $(4x + 5y)(16x^2 - 20xy + 25y^2)$

#### **SECTION R.4**

12.  $x = 3$

14.  $x = -3$

16. No solution

24.  $(a - 1) / (a + 1)$ ;  $a \neq -1, x \neq 0$

34.  $(x + 1) / (x - 1)$ ;  $x \neq 1$

60.  $(2x + 1) / (x + 2)$ ;  $x \neq -2, x \neq 0$

74.  $5/2$ ;  $x \neq 0, x \neq 5/3$

84.  $[x(x + 2)] / [(x + 1)(2x + 3)]$ ;  $x \neq -2, x \neq -3/2, x \neq -1$

90.  $(b + a) / (b - a)$ ;  $a \neq 0, b \neq 0, a \neq b$

### **SECTION 1.3**

22.  $[-h(2x + h)] / [x^2(x + h)^2]$

34.  $[x(2x + 1)] / [(x + 3)(x - 3)]$

### **SECTION 1.4**

22. (a) 2 (b) 2 (c) 1/27

24. (a) 25/4 (b) 5 (c)  $32 \sqrt[3]{2}$

28. 1

30.  $(3y^{11/6}) / (x^{35/6})$

### **SECTION 1.5**

12.  $(x - 2)^{2/3}$

14.  $(x + 1)^{15/2}$

20.  $(x - 1)^2$

22.  $(x - 2) \sqrt{x - 2}$

30.  $2 \sqrt[4]{x + 2}$

50.  $[(x + 1) \sqrt{x - 1} + (x - 1) \sqrt{x + 1} - 1] / [(x + 1)(x - 1)]$

### **SECTION 2.1**

12.  $x = 13/2$

14.  $x = 22/3$

22. All real numbers

30.  $x = 13/10$

44.  $x = -1/2$

48.  $x = -5$

50. No solution

62.  $x = 10/9$

88.  $x = 1/5$

## **SECTION 2.2**

16.  $x < -1/2$

interval notation:  $(-\infty, -1/2)$

graph: put an open circle over  $-1/2$  with an arrow extending to the left

20.  $x > 3/2$

interval notation:  $(3/2, \infty)$

graph: put an open circle over  $3/2$  with an arrow extending to the right

36.  $(-\infty, -2) \cup [0, \infty)$

graph: Put an open circle over  $-2$  with an arrow extending to the left.

Also, put a filled-in circle over  $0$  with an arrow extending to the right.

38.  $(-\infty, -5/4) \cup (2, \infty)$

graph: Put an open circle over  $-5/4$  with an arrow extending to the left.

Also, put an open circle over  $2$  with an arrow extending to the right.

## **SECTION 2.3**

4. The overall discount was \$23.75. This is roughly a 30% discount.

14. Driver A should start out 36 min. before 7 PM – in other words, at 6:24 PM. Driver B should start out 24 min. before 7 PM – in other words, at 6:36 PM.

24. At most 0.80 liters of water can be added.

44. The other number is 5.

### **SECTION 2.4**

22.  $5\sqrt{2} + \sqrt{61} + \sqrt{17}$

24.  $x = -9$

38.  $P_2(8,1)$

### **SECTION 2.5**

12.  $m = -1/2$

18.  $x = 5/3$

24.  $y + 3 = -4/7(x - 6)$  or  $y - 1 = -4/7(x + 1)$

28.  $y = -2x - 5$

36.  $m = 0$  ; y-intercept:  $(0, -5/2)$

38.  $m = 1$ ; y-intercept:  $(0,0)$

### **SECTION 2.6**

14. parallel

34.  $(30/13, 24/13)$

36.  $(2,3)$

40.  $(24/17, -22/17)$

52. The cost of 1 pound of sugar is 45 cents.  
The cost of 1 pound of flour is 50 cents.

54. The speed of the plane is 550 mph. The speed of the wind is 50 mph.

### **SECTION 2.7**

14.  $(3,2,4)$

### **SECTION 3.1**

22.  $x = 0, x = -b/a$

### **SECTION 3.2**

No even problems assigned.

### **SECTION 3.3**

12.  $x = \sqrt[3]{5}, x = 1$

14.  $x = 25/9$

34.  $x = 4$

36.  $x = 0, x = 4$

### **SECTION 3.4**

24.  $x = 1$

Additional Problem #1:  $x / (x + 1) \leq 0$

Solution:  $(-\infty, -1) \cup [0, \infty)$

Graph: Put an open circle over  $-1$  with an arrow extending to the left.  
Also, put a filled-in circle over  $0$  with an arrow extending to the right.

Additional Problem #2:  $(x^2 - 1) / (x^2 + 5x + 6) \leq 0$

Solution:  $(-3, -2) \cup [-1, 1]$

Graph: Put open circles above  $-3$  and  $-2$  and draw a line segment connecting them. Then put filled-in circles over  $-1$  and  $1$  and draw a line segment connecting them.

Additional Problem #3:  $x^2 / (x - 2) > 0$

Solution:  $(2, \infty)$

Graph: Put an open circle above  $2$  with an arrow extending to the right.

### **SECTION 3.5**

16. The object will be at least 144 feet above the ground between 2 and 4 seconds.

### **SECTION 3.6**

14.  $(x + 1)^2 + (y + 1)^2 = 8$

22. Circle with center  $(-3, 1)$  and radius 5

24. Circle with center  $(2, -2)$  and radius  $(3\sqrt{2}) / 2$

26. Empty set

40. vertex:  $(3, -4)$   
axis of symmetry:  $x = 3$   
Parabola opens upward

42. vertex:  $(1, -1/2)$   
axis of symmetry:  $x = 1$   
Parabola opens downward

56. (a) Discriminant is positive and  $a$  is negative

- (b) Discriminant is negative and a is positive
- (c) Discriminant is zero and a is negative
- (d) Discriminant is positive and a is positive

### **SECTION 4.1**

16. All real numbers except for  $5/2$ ; in other words,  $(-\infty, 5/2) \cup (5/2, \infty)$

Domain of  $1 / \sqrt{2x - 5}$  :  $(5/2, \infty)$

20. All real numbers; in other words,  $(-\infty, \infty)$

24. All real numbers except for 1 and 2; in other words,  
 $(-\infty, 1) \cup (1, 2) \cup (2, \infty)$

32. (a)  $t^2 + 2t + 3$                       (b)  $x + 2\sqrt{x} + 3$   
      (c)  $x^4 + 2x^2 + 3$                     (d)  $x^2 + 4x + 6$   
      (e)  $x + 3$                               (f)  $2x + h + 2$

46. Function

48. Not a function

### **SECTION 5.1**

42. 16

44. 1

46.  $a^3 / b$

48. 1

