109 Review Exercises 1

1. Solve the equality $|2x - 4| = 10$.

2. Solve the rational equation $\dfrac{x}{x+5} + \dfrac{3}{x} = 1$.

3. Solve the equation $3(x - 2) + 7 = 2(x + 5)$.

4. Are the equations $\dfrac{x}{x-4} = \dfrac{4}{x-4}$ and $x = 4$ equivalent?

5. Solve the equation $4x^2 - 13x = -3$ by factoring.

6. Solve the equation $(4x + 3)^2 = 4$ by the square root method.

7. Solve the equation $x^2 - 2x - 5 = 0$ by completing the square.

8. Use the quadratic formula to solve the equation $9x^2 - 6x - 4 = 0$.

9. Solve the equation $|x^2 + 6x + 1| = 8$.

10. If the price of a computer is reduced by 35%, then it sells for \$780. What was the original asking price?

11. The length of a rectangle is 3 feet longer than its width. If its area is 54 square feet, what are the rectangle's dimensions?

12. Solve the equation $5x^4 = 125x^2$.

13. Solve the equation $x - \sqrt{x - 11} = 1$.

14. Solve the equation $x + 1 = 9x^3 + 9x^2$.

15. Solve the equation $(x-4)^{2/3} = 16$.

16. Solve the equation $\sqrt{2y+3} + \sqrt{y-2} = 2$.

17. Solve the equation $2x^{2/3} + 7x^{1/3} - 15 = 0$.

18. Solve the inequality $3 \leq 4x - 3 \leq 5$.

19. Solve the inequality $7 - \frac{4}{5}x < \frac{3}{5}$.

20. Solve the inequality $|2x - 1| < 5$.

21. Solve the inequality $|3x + 2| \geq 4$.

22. Solve the inequality $|2 - \frac{y}{2}| - 1 \leq 1$.

23. Including the 6.5% sales tax, the amount a person has to spend on a television cannot exceed \$788.10. What is the most expensive set that can be purchased?

24. A company that manufactures graphing calculators has fixed costs of \$65,000 per month. It costs \$20 to manufacture each calculator. If the calculators sell for \$85 each, how many calculators need to be manufactured and sold each month to make a profit?

25. Solve the inequality $x^2 - 3x \geq 10$.

26. Solve the inequality $\frac{x-4}{x+2} \geq 0$.

27. Solve the inequality $(x-1)^2(x+3) \leq 0$.

28. Solve the inequality $\frac{x-2}{x+2} \leq 2$.

29. Determine whether the relation $\{(1,2),(2,4),(3,2)\}$ is a function.

30. If $f(x) = 3x - 1$, find $f(2)$, $f(a)$, and $f(a+h)$.

31. Find the domain of the function $g(x) = x^3 - 2x + 3$.

32. Find the domain of the function $f(x) = \dfrac{x^2 + x + 1}{\sqrt{x-3}}$.

33. Find the domain of the function $g(x) = \dfrac{x-1}{x^2-4}$.

34. Find the domain of the function $h(x) = \sqrt{x^2 - 5x + 6}$.

35. Find an equation of the line passing through the point $(-1, 1)$ with slope 3.

36. Find an equation of the line passing through the points $(3, -1)$ and $(-2, 1)$.

37. Find an equation of the line parallel to the line $3x + 2y - 1 = 0$ passing through the point $(2, -3)$.

38. Find an equation of the line perpendicular to the line $2x - 3y + 5 = 0$ passing through the point (1,4).

39. A person's salary in 1995 was \$26,500, with yearly increases of \$2500. Write a linear model of the salary S, t years after 1995.

40. Sketch the graph of $y = x^3$ by plotting some points on the graph.

41. Complete the square to find the center and radius of the circle given by the equation $x^2 + y^2 - 6x - 7 = 0$.

42. Graph the function given by $f(x) = \begin{cases} 3 & \text{if} x \leq -1 \\ x^2 + 1 & \text{if } x > -1 \end{cases}$.