

Practice A

For use with pages 568–574

Lesson 9.6

Determine whether the given x -value is a solution of the equation.

1. $\frac{2}{x-3} = \frac{3}{x+1}, x = -1$

2. $\frac{7}{x+3} = \frac{x}{4}, x = 4$

3. $\frac{x}{x-5} + 4 = \frac{1}{x+3}, x = 4$

4. $\frac{3x-1}{x-2} + 3 = \frac{x}{x-2}, x = -2$

Solve the equation by using the LCD. Check each solution.

5. $\frac{3}{x} - \frac{2}{x+1} = \frac{4}{x}$

6. $\frac{x}{x-4} + 1 = \frac{4}{x-4}$

7. $\frac{15}{x} - 4 = \frac{6}{x} + 3$

8. $\frac{4}{x} - \frac{1}{x+2} = \frac{2}{x}$

9. $\frac{2x}{x+3} + 5 = \frac{3}{x+3}$

10. $\frac{1}{x+2} + \frac{1}{x+2} = \frac{4}{x^2-4}$

Solve the equation by cross multiplying. Check each solution.

11. $\frac{2x-3}{x+3} = \frac{3x}{x+4}$

12. $\frac{x}{2x+1} = \frac{5}{4-x}$

13. $\frac{x}{x-3} = \frac{6}{x-3}$

14. $\frac{2}{x-1} = \frac{x-8}{x+1}$

15. $\frac{7}{x+3} = \frac{x}{4}$

16. $\frac{x}{x^2-10} = \frac{3}{2x+1}$

Solve the equation using any method. Check each solution.

17. $\frac{3}{x-1} - 6 = \frac{5x}{x-1}$

18. $\frac{5x}{x-1} - 2 = \frac{14}{x^2-1}$

19. $\frac{5x-7}{x-2} = \frac{8}{x-2}$

20. $\frac{1}{x-5} + \frac{1}{x+5} = \frac{x+3}{x^2-25}$

21. $\frac{2x-4}{x-4} = \frac{4}{x-4}$

22. $\frac{1}{x-2} + \frac{1}{x+3} = \frac{5}{x^2+x-6}$

23. **Population Density** The population density in a large city is related to the distance from the center of the city. It can be modeled by

$$D = \frac{5000x}{x^2 + 36}$$

where D is the population density (in people per square mile) and x is the distance (in miles) from the center of the city. Find the areas where the population density is 400 people per square mile.

1. no 2. yes 3. no 4. no 5. $-\frac{3}{1}$
 6. no solution 7. $\frac{7}{9}$ 8. -4 9. $-\frac{7}{12}$
 10. 4 11. no solution 12. $-5, -1$
 13. 6 14. 2, 5 15. $-7, 4$ 16. $-5, 6$
 17. $\frac{11}{9}$ 18. $-3, \frac{3}{4}$ 19. 3 20. 3 21. no
 solution 22. 2 23. 4.5 miles, 8 miles

Practice B

For use with pages 568–574

Determine whether the given x -value is a solution of the equation.

1. $\frac{1}{x-3} + \frac{1}{x+3} = \frac{10}{x^2-9}, x = 5$

2. $\frac{x}{x-4} + 1 = \frac{4}{x-4}, x = 4$

Solve the equation by using the LCD. Check each solution.

3. $\frac{3x}{x-2} = 1 + \frac{6}{x-2}$

4. $\frac{3x}{x-2} + \frac{1}{x+2} = -\frac{4}{x^2-4}$

5. $\frac{2}{2x+5} + \frac{3}{2x-5} = \frac{5x+5}{4x^2-25}$

6. $\frac{5}{2x+3} + \frac{4}{2x-3} = \frac{14x+3}{4x^2-9}$

7. $-\frac{15}{x} - 4 = \frac{6}{x} + 3$

8. $\frac{3x-1}{x-2} + 3 = \frac{x}{x-2}$

Solve the equation by cross multiplying. Check each solution.

9. $\frac{x+1}{x+3} = 2$

10. $\frac{2}{x-3} = \frac{3}{x+1}$

11. $\frac{7}{x+3} = \frac{x}{4}$

12. $\frac{6+5x}{3x} = \frac{7}{x}$

13. $\frac{x}{x^2-8} = \frac{2}{x}$

14. $\frac{2x}{5} = \frac{x^2-5x}{5x}$

Solve the equation using any method. Check each solution.

15. $\frac{5x}{x-2} = 7 + \frac{10}{x-2}$

16. $\frac{2x}{4-x} = \frac{x^2}{x-4}$

17. $\frac{3x}{x+1} = \frac{12}{x^2-1} + 2$

18. $\frac{6}{x} - \frac{7x}{5} = \frac{x}{10}$

19. $\frac{3}{x} + 12 = 2 + \frac{4}{3x}$

20. $\frac{x^2+2x+2}{x-1} = \frac{2x+3}{x-1}$

21. **Average Cost** A greeting card manufacturer can produce a dozen cards for \$6.50. If the initial investment by the company was \$60,000, how many dozen cards must be produced before the average cost per dozen falls to \$11.50?

22. **Brakes** The braking distance of a car can be modeled by $d = s + \frac{s^2}{20}$ where d is the distance (in feet) that the car travels before coming to a stop, and s is the speed at which the car is traveling (in miles per hour). Find the speed that results in a braking distance of 75 feet.

1. yes 2. no 3. no solution 4. $-\frac{3}{4}$ 5. 0
6. no solution 7. $-\frac{5}{7}$ 8. $\frac{5}{7}$ 9. $-\frac{5}{10}$ 10. 11
11. $-7, 4$ 12. 3 13. $-4, 4$ 14. -5 15. no
solution 16. 0, -2 17. 5, -2 18. $-2, 2$
19. $-\frac{1}{6}$ 20. -1 21. 12,000 dozen cards
22. 30 miles per hour