

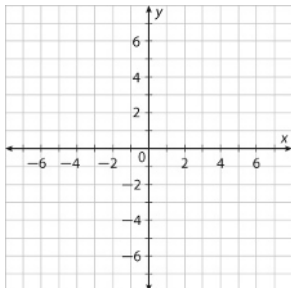
**LESSON**  
**9-3**

# Solving Rational Equations

## Practice and Problem Solving: A/B

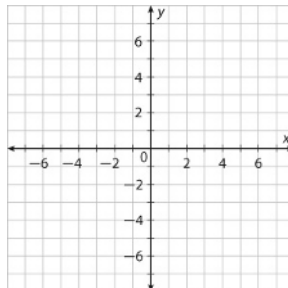
Identify any excluded values. Rewrite the equation with 0 on one side. Then graph to find the solution.

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



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



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Find the LCD for each pair.

3.  $\frac{13}{4x}$  and  $\frac{27}{3x^2}$

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4.  $\frac{11}{x^2 + 3x + 2}$  and  $\frac{1}{x + 2}$

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Solve each equation algebraically.

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

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6.  $\frac{5x-5}{x^2-4x} - \frac{5}{x^2-4x} = \frac{1}{x}$

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7.  $\frac{x^2 - 7x + 10}{x} + \frac{1}{x} = x + 4$

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

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**Solve.**

9. The time required to deliver and install a computer at a customer's location is  $t = 4 + \frac{d}{r}$ , where  $t$  is time in hours,  $d$  is the distance, in miles, from the warehouse to the customer's location, and  $r$  is the average speed of the delivery truck. If it takes 6.2 hours for the employee to deliver and install a computer for a customer located 100 miles from the warehouse, what is the average speed of the delivery truck?

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11.  $\frac{11}{3(x-14)}$ ;  $x \neq -\frac{1}{7}, 14$

12.  $\frac{-x-9}{(x-1)(x+5)}$ ;  $x \neq -9, -5, \frac{4}{7}, \frac{8}{13}, 1$

13. 1 meter

**Practice and Problem Solving: Modified**

1.  $\frac{8x^2}{35}$ ; None

2.  $\frac{1}{x^2}$ ;  $x \neq 0$

3.  $\frac{6}{x-4}$ ;  $x \neq -6, 4, 7$

4.  $2(x+5)$ ;  $x \neq -2, 1$

5. 2;  $x \neq -2, -1, 2$

6.  $\frac{5}{2x^2(x-8)}$ ;  $x \neq -6, 0, 3, 8$

7.  $\frac{3x^7}{5}$ ;  $x \neq 0$

8.  $\frac{x+2}{x+5}$ ;  $x \neq -5, -1$

9.  $\frac{x-5}{2}$ ;  $x \neq 0, 5$

10.  $(x+2)^2$ ;  $x \neq -2, -1$

11.  $x-4$ ;  $x \neq -2, -1$

12.  $\frac{3}{4}$ ;  $x \neq -1, 0, 2$

13.  $\frac{3x+24}{x+2} \cdot \frac{x+9}{2x+16}$ ;  $\frac{3(x+9)}{x+2}$ ;  $x \neq -8, -2$

**Reading Strategies**

1. a.  $\frac{x}{x-2}$

b.  $x = 2$

c. Because  $x = 2$  makes the denominator of the expression equal to 0.

2. a.  $\frac{6x^3y^2}{7z^4} \cdot \frac{21z^2}{2xy^2}$

b.  $\frac{3x^2}{z^2} \cdot \frac{3}{1}$

c.  $\frac{9x^2}{z^2}$

d.  $x = 0, y = 0,$  and  $z = 0$

3. a.  $\frac{3(x-1)}{2(x+2)} \cdot \frac{4(x+2)}{9(x-1)}$

b.  $\frac{1}{1} \cdot \frac{2}{3}$

c.  $\frac{2}{3}$

4. Multiply the quotient by the divisor. If the quotient is correct, the product will equal the dividend.

**Success for English Learners**

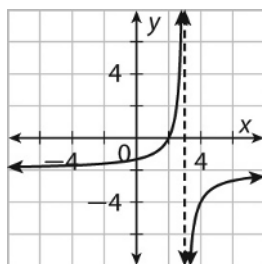
1. I can use the Quotient of Powers Property to subtract exponents that are being divided.

2. When you have a result that has division by 0, it is considered undefined.

**LESSON 9-3**

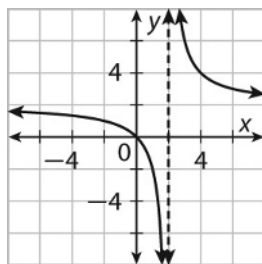
**Practice and Problem Solving: A/B**

1. Excluded value:  $x = 3$ ;  $-\frac{2}{x-3} - 2 = 0$ ;



$x = 2$

2. Excluded value:  $x = 2$ ;  $\frac{4}{x-2} + 2 = 0$ ;



$x = 0$

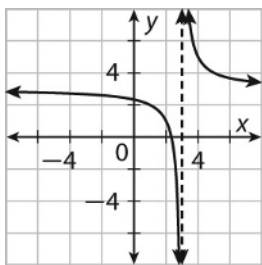
3.  $12x^2$

4.  $(x+1)(x+2)$

5.  $x = 1$
6.  $x = \frac{3}{2}$
7.  $x = 1$
8. no solution
9. about 45.5 mph

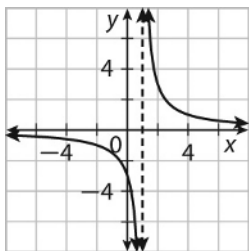
### Practice and Problem Solving: C

1. Excluded value:  $x = 3$ ;  $\frac{2}{x-3} + 3 = 0$ ;



$$x = \frac{7}{3}$$

2. Excluded value:  $x = 1$ ;  $\frac{3}{x-1} = 0$ ;

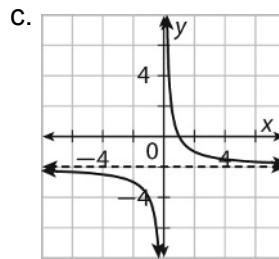


no solutions

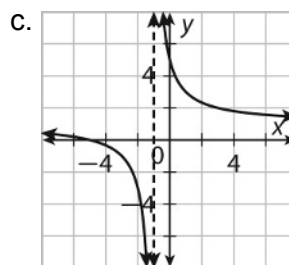
3.  $15x^3y^6$
4.  $(x-1)(x+2)(x-3)$
5.  $x = -1, 7$
6. no solution
7.  $x = -9, -\frac{1}{3}$
8.  $x = \frac{6}{5}$
9. about 14.83 in.

### Practice and Problem Solving: Modified

1. a.  $x = 0$
- b.  $\frac{2}{x} - 2 = 0$



- d.  $x = 1$
2. a.  $x = -1$
- b.  $\frac{4}{x+1} + 1 = 0$



- d.  $x = -5$
3.  $x$
4.  $4(x-6)$
5.  $x = \frac{1}{2}$
6.  $x = -12$
7.  $x = -3, 1$
8.  $x = \frac{24}{13}$

### Reading Strategies

1.  $x = 2$
2.  $x = 0$
3.  $x = 3$
4.  $x = -1, 0, 1$
5.  $x = 0, 2$
6.  $x = -\frac{2}{3}$
7. a.  $x = 14$ ; No extraneous solutions
- b.  $x = \frac{1 \pm \sqrt{97}}{16}$ ; No extraneous solutions
- c.  $x = -3$ ; No extraneous solutions
- d.  $x = \frac{-1 \pm \sqrt{41}}{10}$ ; No extraneous solutions