

Practice: Solving Systems of Equations (3 Different Methods)

Date _____

Solve each system by substitution.

$$\begin{aligned} 1) \quad & 4x + 3y = -8 \\ & -8x + y = -12 \end{aligned}$$

$$\begin{aligned} 2) \quad & 4x - 2y = 8 \\ & y = -2 \end{aligned}$$

$$\begin{aligned} 3) \quad & 14x - 2y = 46 \\ & -7x + y = -23 \end{aligned}$$

$$\begin{aligned} 4) \quad & 5x + y = 8 \\ & -3x + 2y = -10 \end{aligned}$$

Solve each system by elimination.

$$\begin{aligned} 5) \quad & 10x - 8y = 4 \\ & -5x + 3y = -9 \end{aligned}$$

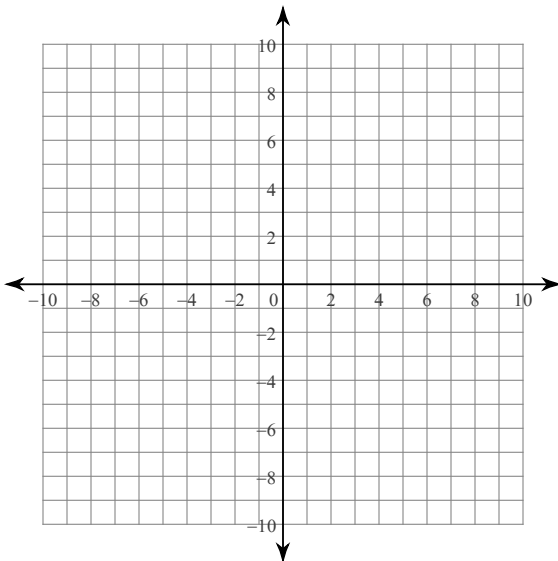
$$\begin{aligned} 6) \quad & -15x + 9y = 27 \\ & -5x - y = 17 \end{aligned}$$

$$\begin{aligned} 7) \quad & -7x - 8y = -23 \\ & 4x + 4y = 12 \end{aligned}$$

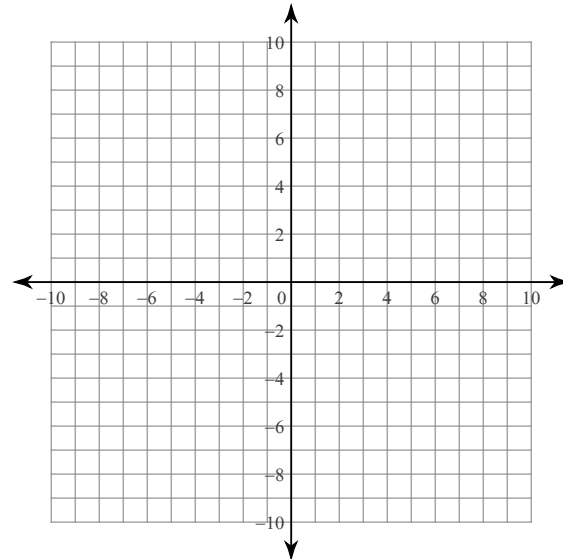
$$\begin{aligned} 8) \quad & -3x - 10y = -4 \\ & x - 5y = 18 \end{aligned}$$

Solve each system by graphing.

$$\begin{aligned} 9) \quad & y = \frac{5}{7}x + 4 \\ & y = -\frac{1}{7}x - 2 \end{aligned}$$



$$\begin{aligned} 10) \quad & x = 7 \\ & y = -x + 9 \end{aligned}$$



- 11) The senior classes at High School A and High School B planned separate trips to the state fair. The senior class at High School A rented and filled 10 vans and 6 buses with 276 students. High School B rented and filled 5 vans and 2 buses with 117 students. Every van had the same number of students in it as did the buses. How many students can a van carry? How many students can a bus carry?
- 12) New York City is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 1 van and 6 buses with 324 students. High School B rented and filled 9 vans and 3 buses with 264 students. Every van had the same number of students in it as did the buses. How many students can a van carry? How many students can a bus carry?
- 13) A boat traveled 280 miles downstream and back. The trip downstream took 7 hours. The trip back took 14 hours. Find the speed of the boat in still water and the speed of the current.
- 14) A boat traveled 252 miles downstream and back. The trip downstream took 12 hours. The trip back took 84 hours. What is the speed of the boat in still water? What is the speed of the current?

Answers to Practice: Solving Systems of Equations (3 Different Methods) (ID: 1)

- | | | | |
|----------------------|-----------------------------------|----------------------------------|----------------------|
| 1) $(1, -4)$ | 2) $(1, -2)$ | 3) Infinite number of solutions | |
| 4) $(2, -2)$ | 5) $(6, 7)$ | 6) $(-3, -2)$ | 7) $(1, 2)$ |
| 8) $(8, -2)$ | 9) $(-7, -1)$ | 10) $(7, 2)$ | 11) Van: 15, Bus: 21 |
| 12) Van: 12, Bus: 52 | 13) boat: 30 mph, current: 10 mph | 14) boat: 12 mph, current: 9 mph | |

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Date _____

Solve each system by substitution.

$$\begin{aligned} 1) \quad x + 4y &= -22 \\ -2x - 2y &= 14 \end{aligned}$$

$$\begin{aligned} 2) \quad x - 2y &= 7 \\ -3x + 6y &= -1 \end{aligned}$$

$$\begin{aligned} 3) \quad -6x + y &= -17 \\ -7x - y &= -22 \end{aligned}$$

$$\begin{aligned} 4) \quad 4x + 7y &= -14 \\ x + 4y &= -8 \end{aligned}$$

Solve each system by elimination.

$$\begin{aligned} 5) \quad 10x + 10y &= -10 \\ -9x + 2y &= -24 \end{aligned}$$

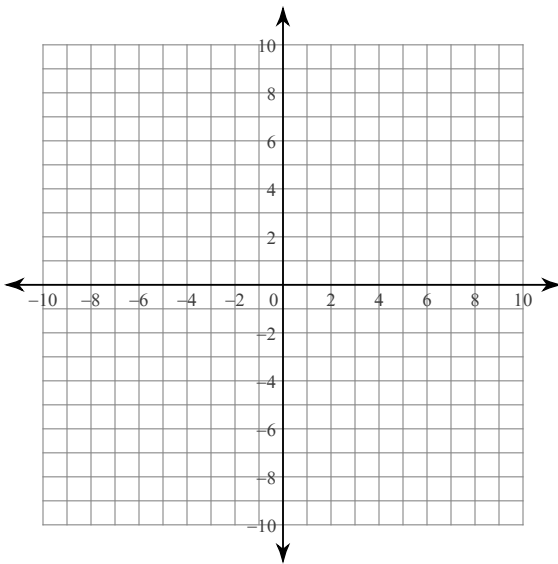
$$\begin{aligned} 6) \quad 4x - 8y &= -4 \\ -12x + 5y &= -26 \end{aligned}$$

$$\begin{aligned} 7) \quad -5x - y &= 2 \\ 4x + 3y &= 5 \end{aligned}$$

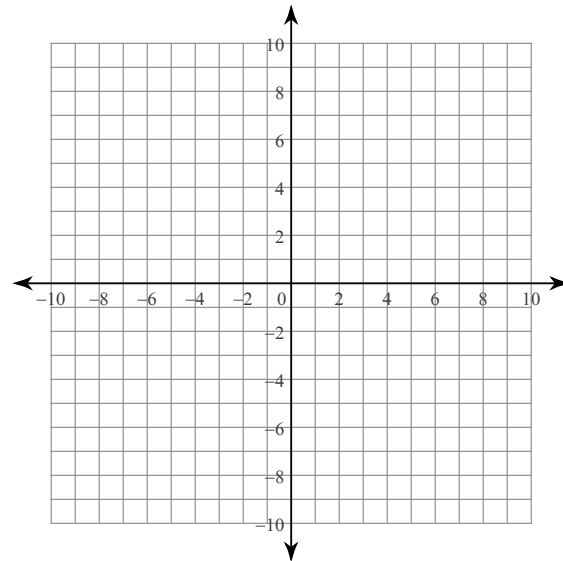
$$\begin{aligned} 8) \quad x - 2y &= -1 \\ -5x + 8y &= 11 \end{aligned}$$

Solve each system by graphing.

$$\begin{aligned} 9) \quad y &= \frac{10}{9}x + 7 \\ y &= -\frac{2}{9}x - 5 \end{aligned}$$



$$\begin{aligned} 10) \quad y &= -\frac{3}{4}x - 9 \\ y &= 3x + 6 \end{aligned}$$



- 11) The school that Jaidee goes to is selling tickets to the annual talent show. On the first day of ticket sales the school sold 10 senior citizen tickets and 11 student tickets for a total of \$190. The school took in \$160 on the second day by selling 5 senior citizen tickets and 12 student tickets. Find the price of a senior citizen ticket and the price of a student ticket.
- 12) The senior classes at High School A and High School B planned separate trips to the indoor climbing gym. The senior class at High School A rented and filled 12 vans and 9 buses with 435 students. High School B rented and filled 5 vans and 3 buses with 155 students. Every van had the same number of students in it as did the buses. How many students can a van carry? How many students can a bus carry?
- 13) Totsakan and Jill each improved their yards by planting rose bushes and geraniums. They bought their supplies from the same store. Totsakan spent \$210 on 9 rose bushes and 12 geraniums. Jill spent \$40 on 3 rose bushes and 1 geranium. Find the cost of one rose bush and the cost of one geranium.
- 14) Heather and Perry each improved their yards by planting grass sod and geraniums. They bought their supplies from the same store. Heather spent \$130 on 4 ft² of grass sod and 10 geraniums. Perry spent \$115 on 12 ft² of grass sod and 5 geraniums. What is the cost of one ft² of grass sod and the cost of one geranium?

Answers to Practice: Solving Systems of Equations (3 Different Methods) (ID: 2)

- 1) $(-2, -5)$
- 2) No solution
- 3) $(3, 1)$
- 4) $(0, -2)$
- 5) $(2, -3)$
- 6) $(3, 2)$
- 7) $(-1, 3)$
- 8) $(-7, -3)$
- 9) $(-9, -3)$
- 10) $(-4, -6)$
- 11) senior citizen ticket: \$8, student ticket: \$10
- 12) Van: 10, Bus: 35
- 13) rose bush: \$10, geranium: \$10
- 14) ft² of grass sod: \$5, geranium: \$11

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Solve each system by substitution.

$$\begin{aligned} 1) \quad & 9x - 3y = -2 \\ & -3x + y = -3 \end{aligned}$$

$$\begin{aligned} 2) \quad & x + 8y = -24 \\ & -x + 2y = -16 \end{aligned}$$

$$\begin{aligned} 3) \quad & -x + y = 4 \\ & -3x + 6y = 3 \end{aligned}$$

$$\begin{aligned} 4) \quad & -x + 7y = 5 \\ & -4x + y = -7 \end{aligned}$$

Solve each system by elimination.

$$\begin{aligned} 5) \quad & 3x - 6y = 18 \\ & x + 3y = -4 \end{aligned}$$

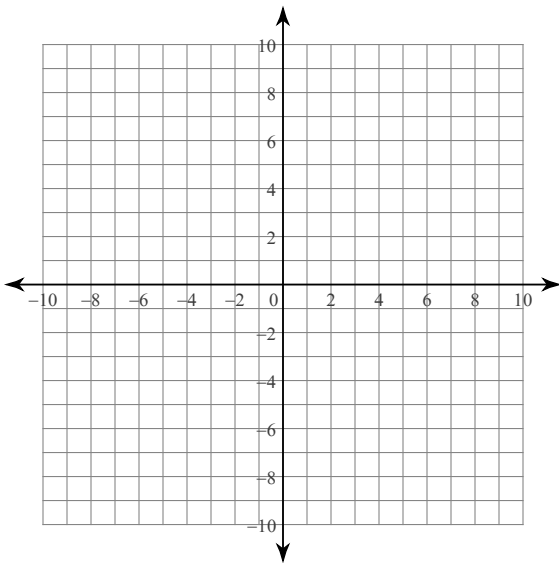
$$\begin{aligned} 6) \quad & -3x + y = 14 \\ & -6x + 6y = 24 \end{aligned}$$

$$\begin{aligned} 7) \quad & x + 12y = -18 \\ & -3x - 4y = -10 \end{aligned}$$

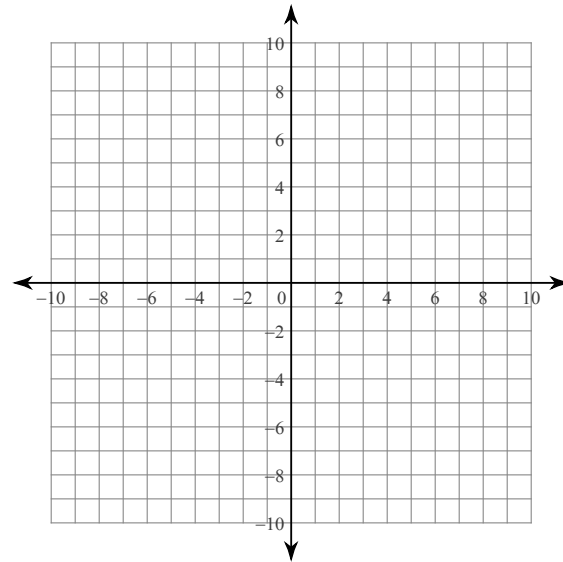
$$\begin{aligned} 8) \quad & -8x + 6y = -18 \\ & 16x + 8y = -24 \end{aligned}$$

Solve each system by graphing.

$$\begin{aligned} 9) \quad & y = \frac{2}{3}x - 1 \\ & y = -\frac{7}{3}x + 8 \end{aligned}$$



$$\begin{aligned} 10) \quad & y = \frac{9}{4}x - 4 \\ & y = -x + 9 \end{aligned}$$



- 11) Jacob and Sumalee each improved their yards by planting daylilies and geraniums. They bought their supplies from the same store. Jacob spent \$107 on 11 daylilies and 4 geraniums. Sumalee spent \$60 on 4 daylilies and 12 geraniums. Find the cost of one daylily and the cost of one geranium.
- 12) Natalie and Anjali each improved their yards by planting hostas and shrubs. They bought their supplies from the same store. Natalie spent \$86 on 2 hostas and 7 shrubs. Anjali spent \$104 on 8 hostas and 4 shrubs. Find the cost of one hosta and the cost of one shrub.
- 13) Jessica and Sarawong each improved their yards by planting daylilies and ornamental grass. They bought their supplies from the same store. Jessica spent \$96 on 4 daylilies and 10 bunches of ornamental grass. Sarawong spent \$102 on 8 daylilies and 5 bunches of ornamental grass. What is the cost of one daylily and the cost of one bunch of ornamental grass?
- 14) The school that Kayla goes to is selling tickets to the annual talent show. On the first day of ticket sales the school sold 6 senior citizen tickets and 7 student tickets for a total of \$116. The school took in \$26 on the second day by selling 4 senior citizen tickets and 1 student ticket. What is the price each of one senior citizen ticket and one student ticket?

Answers to Practice: Solving Systems of Equations (3 Different Methods) (ID: 3)

- 1) No solution 2) $(8, -4)$ 3) $(-7, -3)$ 4) $(2, 1)$
5) $(2, -2)$ 6) $(-5, -1)$ 7) $(6, -2)$ 8) $(0, -3)$
9) $(3, 1)$ 10) $(4, 5)$ 11) daylily: \$9, geranium: \$2
12) hosta: \$8, shrub: \$10 13) daylily: \$9, bunch of ornamental grass: \$6
14) senior citizen ticket: \$3, student ticket: \$14

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Date _____

Solve each system by substitution.

$$\begin{aligned} 1) \quad & -21x - 3y = 7 \\ & 7x + y = 3 \end{aligned}$$

$$\begin{aligned} 2) \quad & 8x + 4y = -24 \\ & 5x + y = -18 \end{aligned}$$

$$\begin{aligned} 3) \quad & x - 2y = 10 \\ & 8x + 2y = 8 \end{aligned}$$

$$\begin{aligned} 4) \quad & x + 3y = -7 \\ & 8x + 7y = -5 \end{aligned}$$

Solve each system by elimination.

$$\begin{aligned} 5) \quad & 6x - 2y = 8 \\ & 12x - 6y = 18 \end{aligned}$$

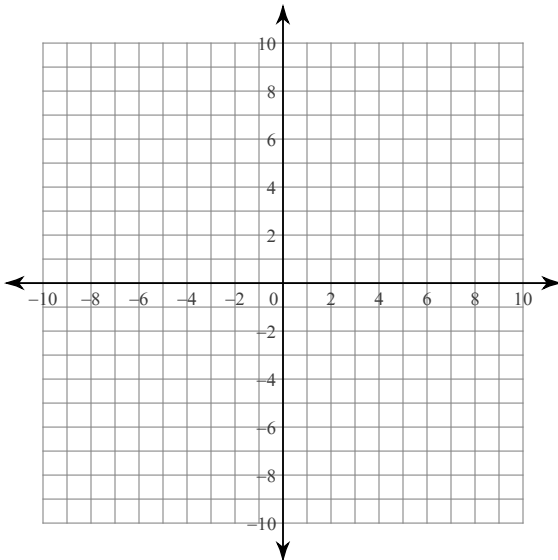
$$\begin{aligned} 6) \quad & -5x - y = 14 \\ & -10x + 5y = 0 \end{aligned}$$

$$\begin{aligned} 7) \quad & -4x - y = -10 \\ & 12x + 9y = 18 \end{aligned}$$

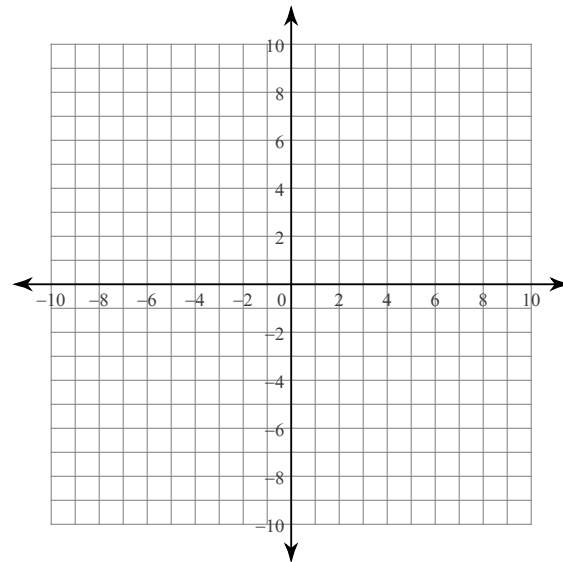
$$\begin{aligned} 8) \quad & 3x - 12y = 21 \\ & 4x - 6y = 28 \end{aligned}$$

Solve each system by graphing.

$$\begin{aligned} 9) \quad & y = -8x - 7 \\ & y = 9 \end{aligned}$$



$$\begin{aligned} 10) \quad & y = -\frac{1}{4}x - 9 \\ & y = -\frac{1}{4}x + 4 \end{aligned}$$



- 11) A boat traveled 160 miles downstream and back. The trip downstream took 8 hours. The trip back took 16 hours. What is the speed of the boat in still water? What is the speed of the current?
- 12) A boat traveled 126 miles downstream and back. The trip downstream took 6 hours. The trip back took 42 hours. What is the speed of the boat in still water? What is the speed of the current?
- 13) A plane traveled 800 miles to Tokyo and back. The trip there was with the wind. It took 10 hours. The trip back was into the wind. The trip back took 20 hours. What is the speed of the plane in still air? What is the speed of the wind?
- 14) The senior classes at High School A and High School B planned separate trips to New York City. The senior class at High School A rented and filled 12 vans and 11 buses with 737 students. High School B rented and filled 6 vans and 5 buses with 341 students. Each van and each bus carried the same number of students. Find the number of students in each van and in each bus.

Answers to Practice: Solving Systems of Equations (3 Different Methods) (ID: 4)

- 1) No solution 2) $(-4, 2)$ 3) $(2, -4)$ 4) $(2, -3)$
5) $(1, -1)$ 6) $(-2, -4)$ 7) $(3, -2)$ 8) $(7, 0)$
9) $(-2, 9)$ 10) No solution 11) boat: 15 mph, current: 5 mph
12) boat: 12 mph, current: 9 mph 13) plane: 60 mph, wind: 20 mph 14) Van: 11, Bus: 55

Practice: Solving Systems of Equations (3 Different Methods)

Date _____

Solve each system by substitution.

$$\begin{aligned} 1) \quad & 2x - y = -9 \\ & 5x + y = -5 \end{aligned}$$

$$\begin{aligned} 2) \quad & -4x + 2y = 0 \\ & x + 2y = -10 \end{aligned}$$

$$\begin{aligned} 3) \quad & 5x + y = 3 \\ & -3x - 5y = -15 \end{aligned}$$

$$\begin{aligned} 4) \quad & -3x - 2y = -6 \\ & x - y = 2 \end{aligned}$$

Solve each system by elimination.

$$\begin{aligned} 5) \quad & -9x - 7y = 8 \\ & 3x - 4y = -28 \end{aligned}$$

$$\begin{aligned} 6) \quad & -x + y = 4 \\ & 5x + 5y = -20 \end{aligned}$$

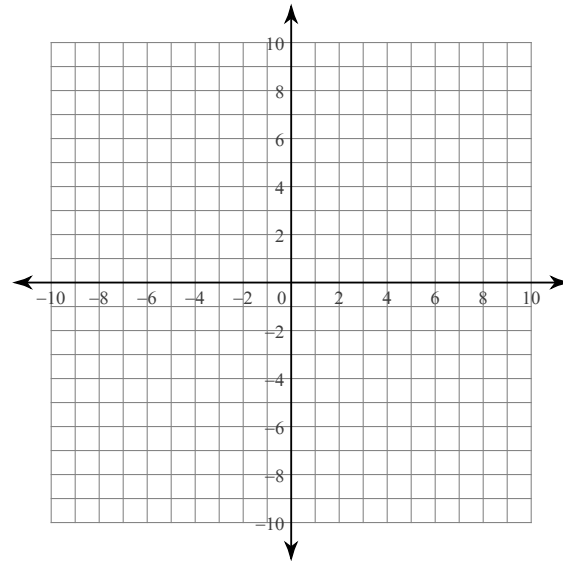
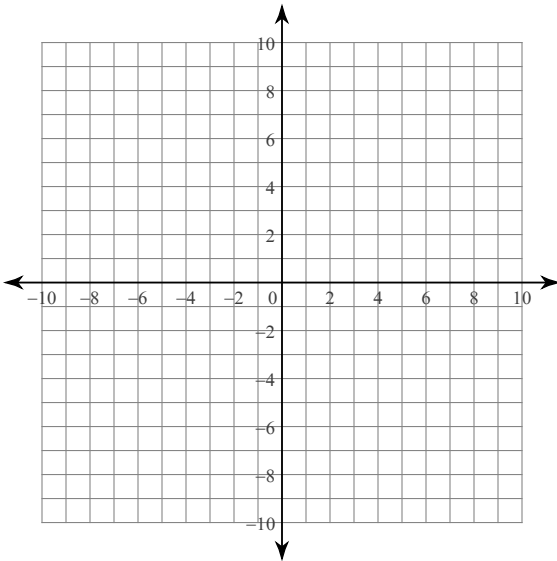
$$\begin{aligned} 7) \quad & -7x + 10y = -5 \\ & -8x + 5y = 20 \end{aligned}$$

$$\begin{aligned} 8) \quad & -18x + 7y = 1 \\ & 9x - 4y = 2 \end{aligned}$$

Solve each system by graphing.

$$\begin{aligned} 9) \quad & y = \frac{3}{2}x - 8 \\ & y = \frac{1}{3}x - 1 \end{aligned}$$

$$\begin{aligned} 10) \quad & y = -\frac{1}{2}x - 6 \\ & y = \frac{9}{8}x + 7 \end{aligned}$$



- 11) When you reverse the digits in a certain two-digit number you increase its value by 36. What is the number if the sum of its digits is 10?
- 12) Jasmine and Brenda are selling cheesecakes for a school fundraiser. Customers can buy pecan cheesecakes and apple cheesecakes. Jasmine sold 2 pecan cheesecakes and 8 apple cheesecakes for a total of \$146. Brenda sold 4 pecan cheesecakes and 7 apple cheesecakes for a total of \$139. Find the cost each of one pecan cheesecake and one apple cheesecake.
- 13) A boat traveled 40 miles downstream and back. The trip downstream took 2 hours. The trip back took 4 hours. Find the speed of the boat in still water and the speed of the current.
- 14) A plane traveled 352 miles to Berlin and back. The trip there was with the wind. It took 4 hours. The trip back was into the wind. The trip back took 8 hours. Find the speed of the plane in still air and the speed of the wind.

Answers to Practice: Solving Systems of Equations (3 Different Methods) (ID: 5)

- | | | | |
|---|----------------|----------------------------------|---------------|
| 1) $(-2, 5)$ | 2) $(-2, -4)$ | 3) $(0, 3)$ | 4) $(2, 0)$ |
| 5) $(-4, 4)$ | 6) $(-4, 0)$ | 7) $(-5, -4)$ | 8) $(-2, -5)$ |
| 9) $(6, 1)$ | 10) $(-8, -2)$ | 11) 37 | |
| 12) pecan cheesecake: \$5, apple cheesecake: \$17 | | 13) boat: 15 mph, current: 5 mph | |
| 14) plane: 66 mph, wind: 22 mph | | | |