

Chapter 9 Quiz Part 1

Multiple Choice

Solve the systems of equations.

_____ 1.
$$\begin{cases} y = x^2 \\ y = x + 2 \end{cases}$$

- a. (2, 1), (-1, 4)
- b. (-2, 4), (1, 1)
- c. (1, 1), (-1, 1)
- d. (2, 4), (-1, 1)
- e. (1, 1), (2, 4)

_____ 2.
$$\begin{cases} x^2 + y^2 = 425 \\ x + 4y = 0 \end{cases}$$

- a. (-20, -5), (20, 5)
- b. (20, -5)
- c. (-5, 20), (20, -5)
- d. (-20, 5)
- e. (-20, 5), (20, -5)

_____ 3.
$$\begin{cases} 9x + 2y = 43 \\ 36x + 9y = 180 \end{cases}$$

- a. (-3, -8)
- b. (8, 3)
- c. (-3, 8)
- d. (3, 8)
- e. (8, -3)

_____ 4.
$$\begin{cases} 8x^2 - y^2 = 279 \\ x^2 + 4y^2 = 72 \end{cases}$$

- a. (-6, 3), (6, -3)
- b. (6, 3), (6, -3), (-6, 3)
- c. (6, 3), (-6, 3), (6, -3), (-6, -3)
- d. (6, 3), (-6, -3)
- e. (3, 6), (-6, 3), (3, -6), (-3, -6)

_____ 5.
$$\begin{cases} y = 1 - x^2 \\ y = x^2 - 1 \end{cases}$$

- a. (1, 0)
- b. (0, 1)
- c. none of these
- d. (1, 0), (-1, 0)
- e. (-1, 0), (0, 1)

_____ 6.
$$\begin{cases} x - y = 5 \\ xy = 6 \end{cases}$$

- a. (6, 1), (-1, -6)
- b. (-1, -6), (1, 6)
- c. (6, 1)
- d. (1, 6)
- e. (-6, 1), (6, -1)

_____ 7.
$$\begin{cases} x^2 + y^2 = 89 \\ x^2 - y^2 = 39 \end{cases}$$

- a. (8, 5), (-5, -8)
- b. (8, 5), (-8, -5)
- c. (5, 8), (-8, 5), (5, -8), (-5, -8)
- d. (-8, 5), (8, -5)
- e. (8, 5), (-8, 5), (8, -5), (-8, -5)

_____ 8.
$$\begin{cases} y = x^2 - 13x \\ 3x - y = 48 \end{cases}$$

- a. (-4, 36), (4, -12)
- b. (4, -36)
- c. (4, -36), (12, -12)
- d. (12, 36), (4, 12)
- e. (8, -72), (24, -24)

_____ 9. Which of the following pairs of lines are parallel.

a.
$$\begin{cases} x = -6y \\ y = -6x \end{cases}$$

b.
$$\begin{cases} 2x + 3y = -6 \\ 4x + 2y = -4 \end{cases}$$

c.
$$\begin{cases} x = -6 \\ y = -4 \end{cases}$$

d.
$$\begin{cases} 2x + 4y = -6 \\ 3x + 2y = 19 \end{cases}$$

e.
$$\begin{cases} 2x + 3y = -6 \\ 6x + 9y = -1 \end{cases}$$

10.
$$\begin{cases} 4x + 3y = -5 \\ -x - 3y = 8 \end{cases}$$

a. The system has no solution.
b. $x = 1, y = 3$
c. $x = 0, y = -4$
d. $x = 1, y = -3$
e. The system has infinitely many solutions. $\left(t, -\frac{4}{3}t\right)$

11.
$$\begin{cases} -3x + 4y = 28 \\ -2x + 2y = 16 \end{cases}$$

a. $x = 5, y = -4$
b. $x = 4, y = -4$
c. $x = 4, y = -3$
d. No solution
e. $x = -4, y = 4$

12.
$$\begin{cases} \frac{1}{2}x + \frac{1}{5}y = 13 \\ \frac{1}{2}x - \frac{2}{3}y = -26 \end{cases}$$

a. $x = 8, y = 46$
b. $x = 8, y = 45$
c. $x = 7, y = 46$
d. $x = 9, y = 44$
e. No solution

13.
$$\begin{cases} 0.3x - 0.4y = -1.4 \\ -0.3x + 0.6y = 1.8 \end{cases}$$

a. $x = 3, y = -2$
b. $x = 1, y = -2$
c. $x = 2, y = -1$
d. $x = -2, y = 2$
e. No solution

14.
$$\begin{cases} 16x - 28y = 4 \\ -8x + 14y = 2 \end{cases}$$

a. $x = 5, y = 1$
b. $x = 3, y = 1$
c. $x = 7, y = 2$
d. $x = 4, y = 7$
e. No solution

- _____ 15.
$$\begin{cases} 4x - 4y = 4 \\ -3x - 4y = 18 \end{cases}$$
- $x = -3, y = -1$
 - $x = -2, y = -2$
 - $x = -4, y = -2$
 - $x = -2, y = -3$
 - No solution
- _____ 16. Find two numbers whose sum is 111 and whose difference is 85.
- 14 and 99
 - 13 and 98
 - 9 and 94
 - 9 and 102
 - 17 and 102
- _____ 17. The admission fee at an amusement park is \$1.50 for children and \$4.00 for adults. On a certain day, 3,300 people entered the park, and the total admission fees collected were \$8,700.00. How many children and how many adults were admitted?
- 2,100 children, 1,200 adults
 - 1,700 children, 1,600 adults
 - 1,600 children, 1,700 adults
 - 1,900 children, 1,400 adults
 - 1,800 children, 1,500 adults
- _____ 18. A researcher performs an experiment to test a hypothesis that involves the nutrients niacin and retinol. She feeds one group of laboratory rats a daily diet of precisely 125.6 units of niacin and 5,400 units of retinol. She uses two types of commercial pellet food. Food A contains 0.86 units of niacin and 30 units of retinol per gram. Food B contains 0.66 units of niacin and 40 units of retinol per gram. How many grams of each food does she feed this group of rats each day?
- 90 grams of food A, 70 grams of food B
 - 95 grams of food A, 160 grams of food B
 - 110 grams of food A, 60 grams of food B
 - 60 grams of food A, 100 grams of food B
 - 100 grams of food A, 60 grams of food B
- _____ 19. State whether the equation is linear: $5x^5 - \sqrt{6}y + \frac{1}{3}z = 0$
- This equation is linear.
 - This equation is quadratic.
 - This equation is not linear.
 - This equation is imaginary.
 - None of these

_____ 20.
$$\begin{cases} x + y - 3z = 4 \\ y - 3z = 7 \\ z = -1 \end{cases}$$

- a. $x = 4, y = -3, z = -1$
- b. $x = -3, y = 4, z = 1$
- c. $x = -1, y = 4, z = -3$
- d. $x = -3, y = 4, z = -1$
- e. $x = -2, y = 4, z = -1$

_____ 21.
$$\begin{cases} x + 5y + z = 8 \\ -y + 3z = 6 \\ 2z = 4 \end{cases}$$

- a. $x = 0, y = 6, z = 2$
- b. $x = 6, y = 0, z = 1$
- c. $x = 2, y = 0, z = 6$
- d. $x = 6, y = 0, z = -2$
- e. $x = 6, y = 0, z = 2$

_____ 22.
$$\begin{cases} x + y + z = 6 \\ x + 2y + 2z = 9 \\ 2x + y - z = 7 \end{cases}$$

- a. $x = 3, y = -2, z = 1$
- b. $x = 4, y = 2, z = 1$
- c. $x = 2, y = 3, z = 1$
- d. The system is inconsistent.
- e. $x = 3, y = 2, z = 1$

_____ 23.
$$\begin{cases} 3x + 4y - z = 10 \\ x + 3y - 2z = 5 \\ 2x - y + z = 1 \end{cases}$$

- a. $x = 1, y = 1, z = 2$
- b. The system is inconsistent.
- c. $x = 1, y = 2, z = -1$
- d. $x = 1, y = 2, z = 1$
- e. $x = 1, y = 3, z = 1$

_____ 24. An investor has \$100,000 to invest in three types of bonds: short-term, intermediate-term, and long-term. How much should she invest in each type to satisfy the given conditions?

Short-term bonds pay 4% annually, intermediate-term bonds pay 5%, and long-term bonds pay 6%. The investor wishes to realize a total annual income of 5.1%, with equal amounts invested in short- and intermediate-term bonds.

- a. short-term: \$30,100, intermediate-term: \$30,000, long-term: \$41,000
- b. short-term: \$30,000, intermediate-term: \$40,000, long-term: \$30,000
- c. short-term: \$30,000, intermediate-term: \$30,000, long-term: \$41,000
- d. short-term: \$30,000, intermediate-term: \$30,000, long-term: \$40,000
- e. short-term: \$30,100, intermediate-term: \$30,000, long-term: \$40,000

_____ 25.
$$\begin{cases} x + 9y - z = 24 \\ x + z = 0 \\ 2x - y - z = 7 \end{cases}$$

- a. $x = 3, y = 2, z = -3$
- b. $x = 2, y = -3, z = 3$
- c. $x = -3, y = 3, z = 2$
- d. $x = 0, y = 0, z = 24$
- e. $x = 0, y = 0, z = -24$