

Chapter Practice

Chapter 3

For Exercises 1–9, choose the correct letter.

1. Which of the following is the solution of the system $\begin{cases} x + y = 3 \\ 4x = 5 - y \end{cases}$?

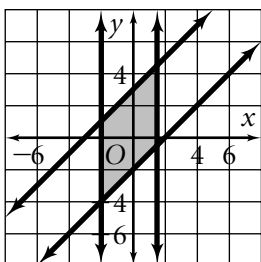
- A $x = \frac{2}{3}, y = 2\frac{1}{3}$
- B $x = 3, y = 0$
- C $x = 2, y = 1$
- D $x = 2\frac{2}{3}, y = \frac{1}{3}$
- E none of the above

2. What is the maximum value of the objective function $P = \frac{1}{2}x + 3y$

for the restrictions $\begin{cases} y \leq -x + 5 \\ y \geq 1 \\ x \geq 2 \end{cases}$?

- A 2 B 4 C 5
- D 10 E 11

3. What is the system of restrictions for the shaded area?



- A $\begin{cases} y \geq x + 3 \\ x \geq -2 \\ x \leq \frac{3}{2} \\ y > x - 2 \end{cases}$
- B $\begin{cases} y \leq x + 3 \\ x \geq -2 \\ x \leq \frac{3}{2} \\ y \geq x - 2 \end{cases}$
- C $\begin{cases} y < x + 3 \\ x \geq -2 \\ x \leq \frac{3}{2} \\ y \geq x + 2 \end{cases}$
- D $\begin{cases} y \leq x + 3 \\ x \leq -2 \\ x \geq \frac{3}{2} \\ y \geq x - 2 \end{cases}$
- E none of the above

4. Which point lies in the xz -plane?

- A $(-6, 0, 4)$ B $(0, 2, 3)$
- C $(0, 4, 0)$ D $(2, -2, 0)$
- E none of the above

5. The graph $3x - 2y + z = 1$ contains which point?

- A $(2, -3, 1)$ B $(0, 0, -1)$
- C $(1, 2, -3)$ D $(3, -4, 2)$
- E none of the above

6. Which of the following systems has no solution?

- A $\begin{cases} 3x + 3y = 7 \\ 2x + y = 8 \end{cases}$ B $\begin{cases} 4x + y = -2 \\ x - y = -3 \end{cases}$
- C $\begin{cases} 2x + 2y = 3 \\ x + y = 4 \end{cases}$ D $\begin{cases} x + 2y = 1 \\ 3x + y = 3 \end{cases}$
- E $\begin{cases} 2x + 4y = 2 \\ -3x + 2y = 7 \end{cases}$

7. Compare the number of solutions of the systems in Column A and Column B.

Column A

$$\begin{cases} y = x + 2 \\ y = 2 \end{cases}$$

Column B

$$\begin{cases} x = -3 \\ y = 2x \end{cases}$$

- A The quantity for Column A is greater.
- B The quantity for Column B is greater.
- C The two quantities are equal.
- D The relationship cannot be determined on the basis of the information supplied.

8. Compare the values in Column A and Column B for the solution of the system.

$$\begin{cases} 6f - 61 + 5g = 0 \\ -5g = 23 - 8f \end{cases}$$

Column A

f

Column B

g

- A The value in Column A is greater.
 B The value in Column B is greater.
 C The two values are equal.
 D The relationship cannot be determined on the basis of the information supplied.
9. Compare the values in Column A and Column B for the solution of the system.

$$\begin{cases} x + y + z = 10 \\ x + y + 2z = 13 \\ x + y + 3z = 16 \end{cases}$$

Column A

x

Column B

y

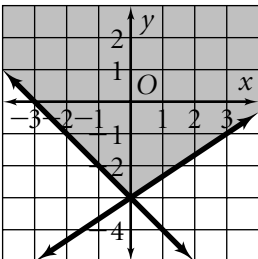
- A The value in Column A is greater.
 B The value in Column B is greater.
 C The two values are equal.
 D The relationship cannot be determined on the basis of the information supplied.

For Exercises 10–16, write your answer.

10. Graph the system of inequalities.

$$\begin{cases} y > 2x - 1 \\ y \leq -x + 3 \end{cases}$$

11. Write a system of inequalities to describe the shaded figure.



12. Graph the equation $2x + y - 3z = 6$.

13. Solve the system of equations.

$$\begin{cases} b = c - a \\ -a + 2b - 7 = c \\ 3a + 3b = c + 2 \end{cases}$$

14. **Open-Ended** Write a system of equations in two variables that has no solution.

15. Two dozen tulip bulbs and one dozen hyacinth bulbs together cost \$11.40. One dozen tulip bulbs and two dozen hyacinth bulbs together cost \$12. How much would one tulip bulb and one hyacinth bulb cost together?

16. Find the number of solutions for the system.

$$\begin{cases} f + g + h = 4 \\ f = 5 - h - g \\ g + h = 7 - f \end{cases}$$