

1. Solve the linear system of equations

$$x - 3y = -6$$

$$5x + 3y = 42$$

A)

Unique solution:

$$(6, 4)$$

B)

Unique solution:

$$(6, -1)$$

C)

Infinitely many solutions:

$$(t, 8t + 7)$$

D) No solution

2. Solve the linear system of equations

$$2x - 6y = 7$$

$$5x + 2y = 10$$

A)

Unique solution:

$$(8, 3)$$

B)

Unique solution:

$$\left(\frac{37}{17}, -\frac{15}{34}\right)$$

C)

Infinitely many solutions:

$$(t, 6t + 1)$$

D) No solution

3. Solve the linear system of equations

$$x + 16y = 9$$

$$\frac{1}{4}x + 4y = 8$$

A)

Unique solution:

$(9, 4)$

B)

Unique solution:

$(2, -4)$

C)

Infinitely many solutions:

$(t, 8t + 9)$

D) No solution

4.

Solve the linear system of equations

$$3x - 2y = 7$$

$$9x - 6y = 14$$

A)

Unique solution:

$(6, -4)$

B)

Unique solution:

$(8, 5)$

C)

Infinitely many solutions:

$(t, 8t + 5)$

D) No solution

5.

Determine whether the system of linear equations has one and only one solution, infinitely many solutions, or no solution. Find all solutions whenever they exist.

$$x + 3y = 9$$

$$3x - y = 7$$

A)

one and only one solution

(3, 2)

B)

one and only one solution

(3, 4)

C)

one and only one solution

(4, 2)

D)

infinitely many solutions

(9 - 3k, k)

E) no solution

6.

Determine whether the system of linear equations has one and only one solution, infinitely many solutions, or no solution. Find all solutions whenever they exist.

$$2x - 5y = 10$$

$$4x - 10y = 20$$

A) one and only one solution (0, -2)

B)

one and only one solution

(5, 0)

C)

one and only one solution

$\left(\frac{15}{2}, 1\right)$

D)

infinitely many solutions

$\left(\frac{5}{2}k + 5, k\right)$

E) no solution

7.

Solve the linear system of equations

$$\frac{7}{4}x - \frac{5}{2}y = 2$$

$$\frac{1}{4}x + \frac{7}{2}y = 8$$

A)

Unique solution:

$(7, -4)$

B)

Unique solution:

$(4, 2)$

C)

Infinitely many solutions:

$(t, 6t + 1)$

D) No solution

8.

Solve the linear system of equations

$$9x - 7y = 63$$

$$45x - 35y = 18$$

A)

Unique solution:

$(5, -4)$

B)

Unique solution:

$(3, 4)$

C)

Infinitely many solutions:

$(t, 8t + 1)$

D) No solution

9. A system composed of two linear equations must have at least one solution if the straight lines represented by these equations are nonparallel.

A) false

B) true

10.

Solve the linear system of equations

$$6x - 7y = 20$$

$$3x + 5y = -7$$

A)

Unique solution:

$$(1, -2)$$

B)

Unique solution:

$$(-9, 3)$$

C)

Infinitely many solutions:

$$(t, 4t + 5)$$

D) No solution

11. Indicate whether the matrix is in row-reduced form.

$$\left[\begin{array}{cc|c} 1 & 0 & 7 \\ 0 & 1 & 5 \end{array} \right]$$

A) The matrix is not in row-reduced form.

B) The matrix is in row-reduced form.

12. Indicate whether the matrix is in row-reduced form.

$$\left[\begin{array}{ccc|c} 1 & 0 & 1 & 9 \\ 0 & 1 & 0 & 8 \\ 0 & 0 & -1 & 6 \end{array} \right]$$

A) The matrix is in row-reduced form.

B) The matrix is not in row-reduced form.

13. Indicate whether the matrix is in row-reduced form.

$$\left[\begin{array}{cc|c} 1 & 0 & -12 \\ 0 & 1 & 2 \\ 0 & 0 & 0 \end{array} \right]$$

A) The matrix is not in row-reduced form.

B) The matrix is in row-reduced form.

14. Indicate whether the matrix is in row-reduced form.

$$\left[\begin{array}{ccc|c} 1 & 0 & 0 & -1 \\ 0 & 1 & 0 & -2 \\ 0 & 0 & 2 & -3 \end{array} \right]$$

- A) The matrix is in row-reduced form.
 B) The matrix is not in row-reduced form.

15. Indicate whether the matrix is in row-reduced form.

$$\left[\begin{array}{ccc|c} 1 & 0 & 0 & 9 \\ 0 & 1 & 0 & 6 \\ 0 & 0 & 0 & 2 \\ 0 & 0 & 1 & 8 \end{array} \right]$$

- A) The matrix is in row-reduced form.
 B) The matrix is not in row-reduced form.

16. Solve the system of linear equations using the Gauss-Jordan elimination method.

$$x - 2y = 8$$

$$3x + 4y = 4$$

- A) (0, 2)
 B) (8, 2)
 C) (4, -6)
 D) (-2, 4)
 E) (4, -2)

17. Solve the system of linear equations using the Gauss-Jordan elimination method.

$$3x + 2y = 14$$

$$x - 4y = -14$$

- A) (2, -14)
 B) (4, -14)
 C) (2, 4)
 D) (2, 16)
 E) (4, -14)

18. Solve the system of linear equations using the Gauss-Jordan elimination method.

$$7x + 5y = 32$$

$$-3x + y = -20$$

- A) (7, -3)
 B) (6, -2)
 C) (2, -6)

- D) $(-6, 2)$
- E) $(-7, -2)$

19.

Solve the system of linear equations using the Gauss-Jordan elimination method.

$$3x + 3y + z = 22$$

$$x + z = 6$$

$$4y - 3z = 8$$

- A) $(4, -14, -8)$
- B) $(-19, 4, 8)$
- C) $(8, -14, -4)$
- D) $(14, 4, 8)$
- E) $(14, -4, -8)$

20.

Solve the system of linear equations, using the Gauss-Jordan elimination method.

$$2x + 5y - 2z = 14$$

$$5x - 6y + 2z = 0$$

$$4x - y + 3z = -7$$

- A) $x=2, y=6, z=5$
- B) $x=2, y=5, z=-5$
- C) $x=2, y=0, z=5$
- D) $x=2, y=0, z=-5$
- E) $x=5, y=0, z=-2$