

Here are 10 exercises in the same style, with varied coefficients and parameters:

1. Find the values of a and b so that the system

$$\begin{cases} 2x + ay = 3 \\ 4x + 2y = b \end{cases}$$

has

- (a) No solution.
- (b) A unique solution.
- (c) Infinitely many solutions.

2. Find the values of p and q so that

$$\begin{cases} x + 2py = 4 \\ 3x + 6y = q \end{cases}$$

has

- (a) No solution.
- (b) A unique solution.
- (c) Infinitely many solutions.

3. Find m and n such that

$$\begin{cases} mx + 2y = 5 \\ 4x + 8y = n \end{cases}$$

has

- (a) No solution.
- (b) A unique solution.
- (c) Infinitely many solutions.

4. Determine α and β for which

$$\begin{cases} x - 2y = 1 \\ 2x + \alpha y = \beta \end{cases}$$

has

- (a) No solution.
- (b) A unique solution.
- (c) Infinitely many solutions.

5. Find the values of k and c so that

$$\begin{cases} kx + y = 2 \\ 3x + 2y = c \end{cases}$$

has

- (a) No solution.
- (b) A unique solution.

(c) Infinitely many solutions.

6. Find a and b for which

$$\begin{cases} 2x + 3y = 5 \\ ax + by = 10 \end{cases}$$

has

(a) No solution.

(b) A unique solution.

(c) Infinitely many solutions.

7. Determine p and r such that

$$\begin{cases} 3x + py = 4 \\ 6x + 2y = r \end{cases}$$

has

(a) No solution.

(b) A unique solution.

(c) Infinitely many solutions.

8. Find all h and k for which

$$\begin{cases} hx + 2y = 3 \\ 2x + 4y = k \end{cases}$$

has

(a) No solution.

(b) A unique solution.

(c) Infinitely many solutions.

9. For what values of m and n does the system

$$\begin{cases} x + my = 2 \\ 2x + 4y = n \end{cases}$$

have

(a) No solution.

(b) A unique solution.

(c) Infinitely many solutions.

10. Find the values of a and b so that

$$\begin{cases} 2x + ay = 6 \\ 4x + 2y = b \end{cases}$$

has

(a) No solution.

(b) A unique solution.

(c) Infinitely many solutions.