

System of Equations

Determine the nature of the solution to each system of linear equations.

1.
$$\begin{cases} 3x + 4y = 5 \\ y = -\frac{3}{4}x + 1 \end{cases}$$

2.
$$\begin{cases} 7x + 2y = -4 \\ x - y = 5 \end{cases}$$

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

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$$1. \begin{cases} 3x + 4y = 5 \\ y = -\frac{3}{4}x + 1 \end{cases}$$

The slopes of these two distinct equations are the same, which means the graphs of these two equations are parallel lines. Therefore, this system will have no solution.

$$2. \begin{cases} 7x + 2y = -4 \\ x - y = 5 \end{cases}$$

The slopes of these two equations are different. That means the graphs of these two equations are distinct nonparallel lines and will intersect at one point. Therefore, this system has one solution.

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

The lines defined by the graph of this system of equations are the same line because they have the same slope and the same y-intercept point.