

Classifying Linear Systems (ALG.SYS.01)

Determine whether the ordered pair is a solution of the given system.

1. $P(-1, 5); \begin{cases} 3x + y = 2 \\ -2x - 3y = -8 \end{cases}$

2. $M(2, 4); \begin{cases} 2x - 3y = -8 \\ y = -3x + 10 \end{cases}$

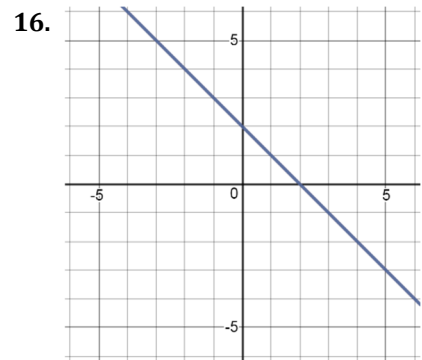
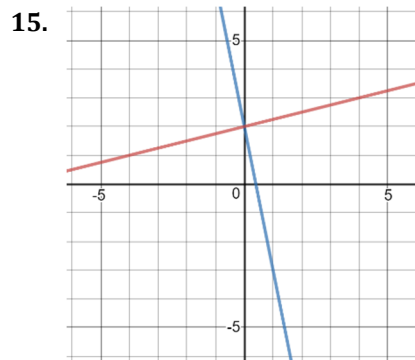
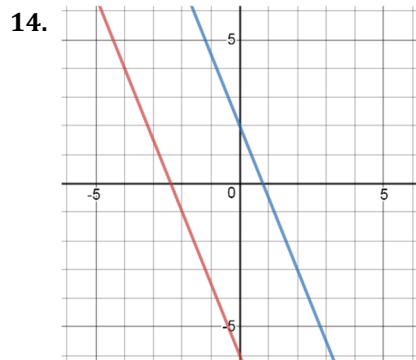
3. $Q(3, -7); \begin{cases} 5x + 4y = -13 \\ 2x - y = 13 \end{cases}$

4. $K(7, 7); \begin{cases} y - 3 = \frac{2}{3}(x - 1) \\ x - 2y = -7 \end{cases}$

Classify each linear system given its description.

- two lines in a system have the same slope but different y -intercepts
- two lines in a system are perpendicular and intersect forming right angles
- two lines in a system have the same slope and the same y -intercept
- two lines in a system intersect at $(2, -3)$
- two lines in a system never intersect
- two lines in a system have different slopes but the same y -intercept
- two lines in a system are parallel
- two lines in a system have the equations $x = 2$ and $y = -3$
- two lines in a system are coincident

Use the graph of each linear system to determine the number of solutions in the system.



Determine the classification for each linear system. Justify your answer.

$$17. \begin{cases} y = \frac{2}{3}x - 5 \\ 3x - 2y = 8 \end{cases}$$

$$18. \begin{cases} y = 3x - 4 \\ y = -2x + 7 \end{cases}$$

$$19. \begin{cases} y - 4 = 2(x + 3) \\ -2x + y = 5 \end{cases}$$

$$20. \begin{cases} y - 3 = 4(x + 2) \\ y + 5 = 4(x - 3) \end{cases}$$

$$21. \begin{cases} y = \frac{1}{3}x - 2 \\ y + 3 = \frac{1}{3}(x + 3) \end{cases}$$

$$22. \begin{cases} y - 7 = 3(x - 2) \\ y = 3x + 1 \end{cases}$$

$$23. \begin{cases} y = \frac{1}{2}x + 5 \\ y = -2x - 3 \end{cases}$$