Classifying Linear Systems (ALG.SYS.01)

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

1. $P(-1, 5);$ $\begin{cases} 3x + y = 2 \\ -2x - 3y = -8 \end{cases}$ **No**

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

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

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

Classify each linear system given its description.

5. two lines in a system have the same slope but different y-intercepts   **inconsistent**

6. two lines in a system are perpendicular and intersect forming right angles
   consistent/independent

7. two lines in a system have the same slope and the same y-intercept
   consistent/dependent

8. two lines in a system intersect at $(2, -3)$ **consistent/independent**

9. two lines in a system never intersect **inconsistent**

10. two lines in a system have different slopes but the same y-intercept
    consistent/independent

11. two lines in a system are parallel **inconsistent**

12. two lines in a system have the equations $x = 2$ and $y = -3$ **consistent/independent**

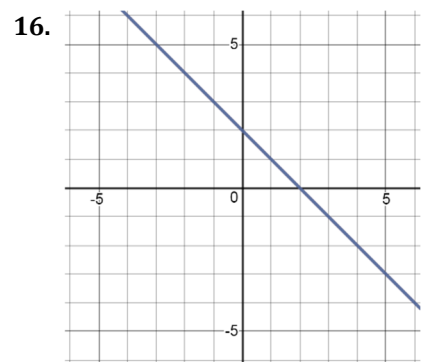13. two lines in a system are coincident **consistent/dependent**

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

14.
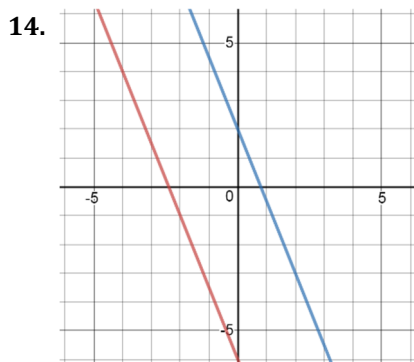
inconsistent
0 solutions

15.
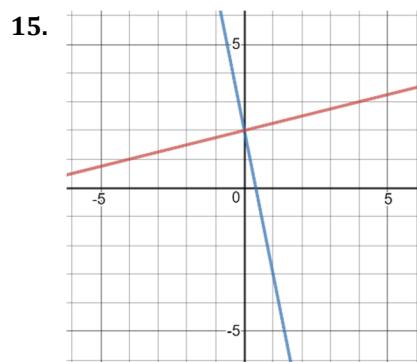
consistent/independent
1 solution

16.

consistent/dependent
infinite solutions

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

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

consistent/independent

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

consistent/independent

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

inconsistent

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

inconsistent

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

consistent/dependent

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

consistent/dependent

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

consistent/independent