Systems of Linear Equations in Two Variables

(M3/13, 3/14,)

1. What is the solution to the system of linear equations? $y = 2x + 1$ and $y = -x + 7$?

- A) $(2, 5)$
- B) $(5, 2)$
- C) $(3, 4)$
- D) $(1, 3)$

2. Which ordered pair is a solution to the following system of equations?

$3x + 2y = 12$

$x - y = -1$

- A) $(3, 4)$
- B) $(2, 3)$
- C) $(4, 0)$
- D) $(1, 2)$

3. When graphing a system of two linear equations, if the two lines intersect at a single point $(-3, 4)$, what does this point represent?

- A) The y-intercept of both lines
- B) The only ordered pair that satisfies both equations simultaneously
- C) The slope of the system
- D) That the system has infinitely many solutions

4. A graph shows two parallel lines that never intersect. How many solutions does this system of linear equations have?

- A) Exactly one solution

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- B) Exactly two solutions
- C) No solution
- D) Infinitely many solutions

5. Which system of equations is represented by a graph of two lines that overlap completely (coincide)?

- A) $y = 3x + 2$

  $y = 3x - 2$
- B) $y = 2x + 4$

  $2y = 4x + 8$
- C) $y = -x + 5$

  $y = x + 5$
- D) $x + y = 6$

  $x - y = 6$

6. How can you identify a system with NO solution just by looking at its equations in slope-intercept form ($y = mx + b$)?

- A) The slopes are different and the y-intercepts are the same.
- B) The slopes are negative reciprocals of each other.
- C) The slopes are the same and the y-intercepts are different.
- D) Both the slopes and the y-intercepts are identical.

7. Solve the system using substitution:

$y = 4x - 3$

$2x + y = 9$

- A) $(2, 5)$
- B) $(5, 2)$
- C) $(3, 9)$
- D) $(1, 1)$

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8. Solve the system using elimination:

$$4x + 3y = 17$$

$$2x - 3y = 1$$

- A) $(3, 2)$
- B) $(2, 3)$
- C) $(3, \frac{5}{3})$
- D) $(4, \frac{1}{3})$

9. What is the first best step to eliminate the y-variable in the system below?

$$5x + 2y = 16$$

$$3x - 4y = 20$$

- A) Multiply the first equation by 2, then add the equations.
- B) Multiply the first equation by -2, then add the equations.
- C) Multiply the second equation by 2, then subtract the equations.
- D) Add the two equations together immediately.

10. Determine the number of solutions for the system:

$$x - y = 5$$

$$-6x + 2y = -10$$

- A) One solution: $(0, -5)$
- B) One solution: $(2, 1)$
- C) No solution
- D) Infinitely many solutions

11. Determine the number of solutions for the system:

$$2x + 5y = 10$$

$$2x + 5y = -4$$

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- A) One solution
- B) Two solutions
- C) No solution
- D) Infinitely many solutions

12. A graph of a system consists of Line A passing through $(0, 2)$ and $(2, 6)$, and Line B passing through $(0, 5)$ and $(1, 6)$. Where do the two lines intersect?

- A) $(2, 6)$
- B) $(3, 8)$
- C) $(1, 4)$
- D) $(4, 10)$

13. Which term describes a system of linear equations that has at least one solution?

- A) Inconsistent
- B) Consistent
- C) Parallel
- D) Undefined

14. If a system of linear equations is inconsistent, what does its graph look like?

- A) Two intersecting lines
- B) Two perpendicular lines
- C) Two parallel lines
- D) A single line

15. Solve the system of equations:

$$x = 2y + 4$$

$$3x - 5y = 15$$

- A) $(10, 3)$
- B) $(3, 10)$

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- C) $(6, 1)$
- D) $(8, 2)$

16. What is the x-coordinate of the intersection point of the graphs of $2x + y = 8$ and $x - y = 1$?

- A) 2
- B) 3
- C) 4
- D) 5

17. What is the y-coordinate of the solution to the system:

$$3x + 4y = 18$$

$$3x - 2y = 0$$

- A) 2
- B) 3
- C) 4
- D) 6

18. Line m has the equation $y = -\frac{1}{2}x + 4$, and Line n has the equation $x + 2y = 8$. How many points do Line m and Line n have in common?

- A) 0
- B) 1
- C) 2
- D) Infinitely many

19. The graph of a system shows a vertical line at $x = 3$ and a horizontal line at $y = -2$. What is the solution to the system?

- A) $(-2, 3)$
- B) $(3, -2)$
- C) $(3, 0)$

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- D) $(0, -2)$

20. For what value of k will the following system of equations have NO solution?

$$kx - 4y = 10$$

$$3x - 2y = 7$$

- A) $k = 6$
- B) $k = -6$
- C) $k = 3$
- D) $k = \frac{3}{2}$

21. For what value of c will the following system of equations have INFINITELY MANY solutions?

$$2x + 3y = 6$$

$$4x + 6y = c$$

- A) 3
- B) 6
- C) 12
- D) -12

22. The sum of two numbers is 25, and their difference is 7. Which system of equations can be used to find the two numbers, x and y?

- A) $x + y = 7$

  $x - y = 25$
- B) $x + y = 25$

  $x - y = 7$
- C) $xy = 25$

  $x - y = 7$
- D) $2x + y = 25$
- $x - 2y = 7$

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23. Adult tickets to a school play cost 8 baht and student tickets cost 5 baht. If 120 tickets were sold for a total of 750 baht, how many adult tickets (a) and student tickets (s) were sold?

- A) 50 adult tickets, 70 student tickets
- B) 70 adult tickets, 50 student tickets
- C) 60 adult tickets, 60 student tickets
- D) 40 adult tickets, 80 student tickets

24. Two cell phone plans are graphed on the same coordinate plane, where x is the number of gigabytes of data used and y is the total monthly cost. Plan A is $y = 10x + 20$ and Plan B is $y = 5x + 45$. At how many gigabytes do both plans cost the exact same amount?

- A) 4 GB
- B) 5GB
- C) 6GB
- D) 70GB

25. When solving a system of linear equations algebraically, you end up with the false statement $0 = 9$. What does this mean about the graph of the system?

- A) The lines intersect at $(0, 9)$.
- B) The lines intersect at $(9, 0)$.
- C) The lines are parallel and never intersect.
- D) The lines are the exact same line.

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