

Sample Essay Questions

Use the system of Linear Equation to solve the following problems. (Set up two equations and two unknown and then solve)

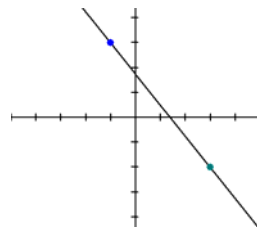
- Peter received a \$10,000 advance when his book was published. He invested this in two different money markets, one at 12% simple interest and one at 15% simple interest. If he received \$1320 in interest for the first year, how much did he have invested at each amount?
- How many liters of a 3% saline solution must be added to an 8% saline solution to obtain 20 liters of a 6% saline solution?
- The length of a rectangle is 4 feet less than 3 times the width. The perimeter is 16 feet. Find its length.
- Two numbers have a sum of 430 and a difference of 114. Find the numbers.

Chapter 3

5. Find the slope of the line that passes through the given points.

a) $(6, 5)$ and $(1, 7)$

b)



c) $(-5, 0)$ and $(0, -3)$

6. Find the slope of each line.

a) $x + y = 12$

b) $3x + y = 8$

c) $11x - 3y = 33$

d) $9x + y = -12$

e) $y + 5 = 0$

f) $2x - 7 = 0$

7. Determine whether each pair of lines is parallel, perpendicular, or neither.

a) $3x = 2y + 3$
 $2x + 3y = 2$

b) $x + 3y = 4$
 $8x + 2y = 2$

c) $9x = 16 - 3y$
 $16 - 4y = 12x$

8. Use the slope-intercept form to graph each equation. (do not plotting points)

a) $y = \frac{1}{2}x - 3$

b) $y = -\frac{1}{4}x + 2$

c) $y = -4x$

d) $5x + 2y = 10$

9. Write a slope-intercept equation of the line with each given slope, m , and y -intercept, $(0, b)$.

a) $m = -9; b = 4$

b) $m = -\frac{2}{3}; b = 7$

c) $m = 0; b = \frac{1}{2}$

d) $m = -\frac{5}{2}; b = \frac{31}{2}$

10. Find an equation of each line with the given slope that passes through the given point. Write the equation in the form $Ax + By = C$.

a) $m = 4; (10, 5)$

b) $m = -\frac{7}{9}; (5, 2)$

c) $m = -6; (-8, -10)$

d) $m = \frac{1}{2}; (-4, 8)$

11. Find a slope-intercept equation of the line passing through each pair of points.

a) $(-7, -4)$ and $(0, 5)$

b) $(3, 7)$ and $(-2, -6)$

c) $(9, -9)$ and $(6, -5)$

12. A study of grocery buying habits in a particular region stated that for the years 2001-2005, the annual number of new family-run grocery store can be estimated by the equation $y = -150x + 2500$, where x is the number of year after 2000. Graph this equation and use the graph to predict the number of family-run store that will start up in 2008.

Chapter 4

Determine whether the ordered pair is the ordered pair a solution of the linear system?

$$13. \begin{cases} x + y = 3 \\ 2x - y = 3 \end{cases}; (2, 1)$$

$$14. \begin{cases} x + 2y = 5 \\ 2x - y = -2 \end{cases}; (1, 4)$$

Solve the system by graphing and label at least two points on each graph. State the number(s) of solution.

$$15. \begin{cases} y = 3x - 1 \\ y = -3x + 3 \end{cases}$$

$$16. \begin{cases} 2x - y = 4 \\ 6x - 2y = 8 \end{cases}$$

Solve the system of equations by the substitution method and state the number(s) of solution.

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

$$18. \begin{cases} 2x + y = 8 \\ y = 3x - 2 \end{cases}$$

Solve the system by the substitution or the addition method state the number(s) of solution.

$$19. \begin{cases} 3x + y = 5 \\ 2x - y = 10 \end{cases}$$

$$20. \begin{cases} 0.25x + 0.75y = 2 \\ 0.5x + 0.25y = -1 \end{cases}$$

$$21. \begin{cases} \frac{1}{6}x - 2y = 1 \\ x - 12y = 6 \end{cases}$$

$$22. \begin{cases} \frac{x}{7} + \frac{y}{14} = 1 \\ \frac{x}{3} - \frac{y}{6} = 0 \end{cases}$$