

Simplify all answers and show your work!

Solve the system of equations.

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

2.
$$\begin{cases} 5x + 2y = 16 \\ 3x - 4y = 20 \end{cases}$$

3.
$$\begin{cases} 2x + 3y = 1 \\ 3x - 2y = 8 \end{cases}$$

Evaluate the determinants.

4.
$$\begin{vmatrix} 3 & 2 \\ -4 & 5 \end{vmatrix}$$

5.
$$\begin{vmatrix} 0 & -5 \\ 3 & 2 \end{vmatrix}$$

Cramer's Rule:

6. Find the value of D_x for the following system of equations:
$$\begin{cases} 3x - 4y = 13 \\ x + 3y = 3 \end{cases}$$

7. Find the value of D_y for the following system of equations:
$$\begin{cases} 3x - 4y = 13 \\ x + 3y = 3 \end{cases}$$

8. How many ounces each of 20% acid and 50% acid must be mixed together to get 120 ounces of a 30% acid?

9. The perimeter of a rectangle is 68 m. If the width were doubled and the length were increased by 23 m, the perimeter would be 138 m. What are the length and width of the rectangle?

10. A woman made a deposit of \$196. If her deposit consisted of 60 bills, some of them one-dollar bills and the rest being five-dollar bills, how many one-dollar bills did she deposit?

11. The sum of three consecutive even integers is 204. Find the integers.

Factor completely.

12. $48r^2 + 16r^5$

13. $4ax + 4ay + 3bx + 3by$

14. $x^2 + xy - 2x - 2y$

15. $x^2 + 3x - 28$

16. $20x^2 + 39x - 11$

17. $x^2 - 121$

18. $x^2 + 24x + 144$

19. $12q^3 + 21q^2 - 45q$

20. $x^4 - 13x + 36$