

Homework: Determinants and Cramer's Rule

In Problems 1-5, evaluate each determinant.

1. $\begin{vmatrix} -2 & 1 \\ 3 & 5 \end{vmatrix}$	2. $\begin{vmatrix} 8 & 2 \\ 4 & -1 \end{vmatrix}$
3. $\begin{vmatrix} -5 & -2 \\ 4 & -3 \end{vmatrix}$	4. $\begin{vmatrix} -7 & -1 \\ 0 & -4 \end{vmatrix}$
5. $\begin{vmatrix} -\frac{1}{2} & \frac{1}{2} \\ \frac{2}{5} & \frac{3}{2} \end{vmatrix}$	

In Problems 6-13, use Cramer's rule to solve each system or to determine that the system is inconsistent (no solution) or contains dependent equations (infinite solutions)

6. $\begin{aligned} 4x - y &= 11 \\ 2x + 3y &= 9 \end{aligned}$	7. $\begin{aligned} x - 2y &= 6 \\ 3x + y &= 25 \end{aligned}$
8. $\begin{aligned} 5x - y &= -7 \\ 4x + 2y &= -14 \end{aligned}$	9. $\begin{aligned} 8x - 5y &= 40 \\ 3x + y &= 15 \end{aligned}$
10. $\begin{aligned} 9x - 4y &= 3 \\ 5x - y &= -2 \end{aligned}$	11. $\begin{aligned} y &= 3x + 5 \\ x - y &= 7 \end{aligned}$
12. $\begin{aligned} x - y &= -8 \\ 3x - 3y &= -24 \end{aligned}$	13. $\begin{aligned} x - 4y &= -2 \\ 3x - 12y &= 5 \end{aligned}$

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In Problems 14-16, evaluate each determinant

14. $\begin{vmatrix} -2 & 1 & 4 \\ 1 & 3 & 0 \\ 5 & 2 & -3 \end{vmatrix}$	15. $\begin{vmatrix} 5 & -2 & 3 \\ 4 & -1 & 7 \\ -1 & 0 & -4 \end{vmatrix}$
16. $\begin{vmatrix} -5 & 2 & 0 \\ 0 & -1 & 3 \\ 4 & 0 & 2 \end{vmatrix}$	

In Problems 17-20, use Cramer's rule to solve each system

17. $\begin{aligned} 4x + 2y - z &= 0 \\ 3x - y - 2z &= 5 \\ x + y + 4z &= -1 \end{aligned}$	18. $\begin{aligned} x + y - 2z &= 1 \\ 3x - y - z &= 9 \\ 2x + 3y - z &= 9 \end{aligned}$
19. $\begin{aligned} 2x - y + z &= 13 \\ 3x + 3y - z &= 22 \\ 4x + 5y - 2z &= 30 \end{aligned}$	20. $\begin{aligned} x + y - 2z &= 5 \\ x - 2y + z &= -7 \\ 3x + y + z &= -8 \end{aligned}$

In Problems 21-22, evaluate each determinant

21. $\begin{vmatrix} 2 & -1 & 3 & 1 \\ 0 & -4 & 1 & 5 \\ -3 & 1 & 4 & 2 \\ 0 & -2 & 0 & 3 \end{vmatrix}$	22. $\begin{vmatrix} 3 & -2 & 4 & 2 \\ 1 & -1 & -2 & 3 \\ 5 & -3 & 7 & -1 \\ -4 & 1 & -3 & -6 \end{vmatrix}$
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