

Cramer's Rule

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Examples, solutions, videos, worksheets, games and activities to help Algebra students learn how to use Cramer's Rule to solve a system of equations.

What is the Cramer's Rule?

The Cramer's Rule uses determinants to solve a linear system of equations.

The following diagram shows how to use Cramer's rule to solve a systems of 3 equations.

Scroll down the page for more examples and explanations on how to use the Cramer's Rule.

Cramer's Rule

$$a_1x + b_1y + c_1z = d_1$$

$$a_2x + b_2y + c_2z = d_2$$

$$a_3x + b_3y + c_3z = d_3$$

$$\text{Let } D = \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$$

If $D \neq 0$ then

$$x = \frac{\begin{vmatrix} d_1 & b_1 & c_1 \\ d_2 & b_2 & c_2 \\ d_3 & b_3 & c_3 \end{vmatrix}}{D}$$

$$y = \frac{\begin{vmatrix} a_1 & d_1 & c_1 \\ a_2 & d_2 & c_2 \\ a_3 & d_3 & c_3 \end{vmatrix}}{D}$$

$$z = \frac{\begin{vmatrix} a_1 & b_1 & d_1 \\ a_2 & b_2 & d_2 \\ a_3 & b_3 & d_3 \end{vmatrix}}{D}$$

Cramer's Rule

Sometimes using matrix algebra or inverse matrices to find the solution to a system of linear equations can be tedious. Sometimes it is more convenient to use Cramer's Rule and determinants to solve a system of equations. Finding determinants becomes much more

difficult with higher dimensions, and so Cramer's Rule is better for smaller systems of linear equation.

Cramer's rule, solving systems

How to use Cramer's Rule to solve a system of equations?

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Cramer's Rule to Solve a System of 3 Linear Equations – Example 1

Cramer's Rule to Solve a System of 3 Linear Equations – Example 2

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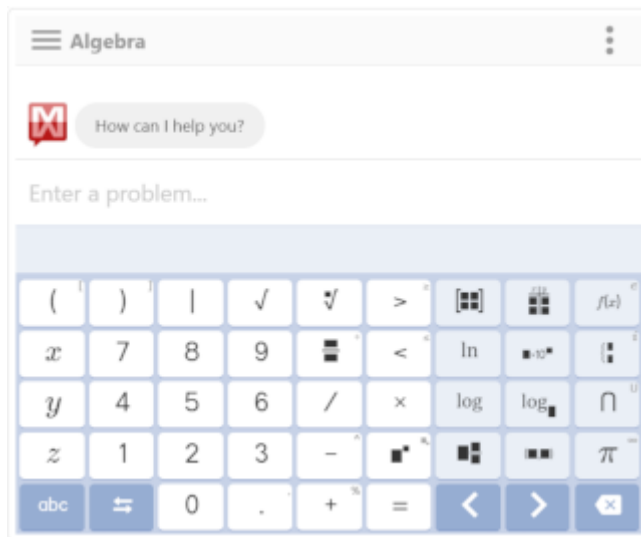
Cramer's rule, 3x3 linear system

How to solve a 3x3 system of linear equations using Cramer's rule?

Show Step-by-step Solutions



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