



Solving Systems with Matrix Inversion

Today's Standard

HSA.REI.C9 - (+) Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3×3 or greater).

Cues	Notes
What is matrix inversion?	Matrix inversion is the process of finding a matrix that, when multiplied by the original matrix, results in the identity matrix.
How do you find the inverse of a matrix?	To find the inverse, calculate the determinant and use it to determine if an inverse exists. If the determinant is non-zero, use row reduction or other methods to find the inverse.
What are the applications of matrix inversion?	Applications include cryptography, computer graphics, economic modeling, engineering, and network analysis.
What is the difference between inversion and transposition?	Inversion involves creating a matrix that undoes the original matrix's operation, while transposition flips the matrix over its diagonal.
What is the determinant's role in matrix inversion?	The determinant must be non-zero for an inverse to exist. It helps determine if a matrix is invertible.

Summary

Matrix inversion is essential for solving systems of linear equations and has numerous applications. Understanding the determinant's role and differentiating inversion from transposition are key to mastering this concept.