Role of Zero and Identity Matrices

Today's Standard

HSN.VM.C10 - (+) Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.

Cues	Notes
What is a zero matrix?	A zero matrix is a matrix in which all elements are zero.
What is an identity matrix?	An identity matrix is a square matrix with 1s on the diagonal and 0s elsewhere.
How do zero and identity matrices function in matrix operations?	Zero and identity matrices play roles similar to 0 and 1 in real numbers, respectively.
What is the determinant of a matrix?	The determinant is a scalar value that can be computed from the elements of a square matrix.
When does a matrix have an inverse?	A matrix has an inverse if and only if its determinant is nonzero.

Summary

Zero and identity matrices are fundamental in matrix operations, similar to 0 and 1 in real numbers. The determinant of a matrix must be nonzero for the matrix to have an inverse.