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Lesson 1: Matrices: Basic Operations, Special Types of Matrices and Properties

Lesson 2: Inverse of Matrices and Properties

Video: Matrix Inverse
7 min

Reading: Slides (Module 2) on Matrix Inverse with Examples
10 min

Video: Properties of Invertible Matrices
3 min

Reading: Slides (Module 2) on Properties of Invertible Matrices
10 min

Practice Assignment: Practice Problems 3
20 min

Lesson 3: Determinants and It's Properties

Lesson 4: Elementary Matrices and LU Factorization

Slides (Module 2) on Properties of Invertible Matrices

Properties of Invertible Matrices

Theorem: If A is an invertible matrix, A^{-1} is also invertible and

$$(A^{-1})^{-1} = A$$



Properties of Invertible Matrices

Theorem: If A is an invertible matrix, A^{-1} is also invertible and

$$(A^{-1})^{-1} = A$$



Theorem: If A is any invertible matrix and c is a non-zero scaler, then the matrix cA is also invertible and

$$(cA)^{-1} = \frac{1}{c}A^{-1}$$



Properties of Invertible Matrices

Theorem: If A, B are invertible matrices of same size, then AB is also invertible and

$$(AB)^{-1} = B^{-1}A^{-1}$$

The above theorem can be generalized for any number of matrices.

$$(A_1A_2 \dots A_n)^{-1} = A_n^{-1} \dots A_2^{-1}A_1^{-1}$$



Properties of Invertible Matrices

Theorem: If A is an invertible matrix, A^T is also invertible and

$$(A^T)^{-1} = (A^{-1})^T$$



Properties of Invertible Matrices

Theorem: If A is an invertible matrix, A^T is also invertible and

$$(A^T)^{-1} = (A^{-1})^T$$



Theorem: If A is an invertible matrix, then A^n is also invertible for all non-negative integers n and

$$(A^n)^{-1} = (A^{-1})^n$$



Mark as completed

