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### 8.1.3 What you will learn

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# What You Will Learn

Upon completion of this unit, you should be able to

- Determine with Gaussian elimination (LU factorization) when a system of linear equations with  $n$  equations in  $n$  unknowns does not have a unique solution.
- Understand and apply Gauss Jordan elimination to solve linear systems with one or more right-hand sides and to find the inverse of a matrix.
- Identify properties that indicate a linear transformation has an inverse.
- Identify properties that indicate a matrix has an inverse.
- Create an algorithm to implement Gauss-Jordan elimination and determine the cost function.
- Recognize and understand that inverting a matrix is not the method of choice for solving a linear system.
- Identify specialized factorizations of matrices with special structure and/or properties and create algorithms that take advantage of this (enrichment).

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