5.0 Module Overview: Optimization Problems

Module Overview

In this module we will talk about optimization problems. You will learn the powerful method of least squares approximation and how to apply it to solve such problems.

The important notion of an orthonormal basis will be introduced. You will learn to calculate an orthonormal basis using the Gram-Schmidt method. Finally, you will learn to calculate determinants in (at least) two ways: the pivot method and the cofactor method.

Module Outcomes

As a result of this module, you will be able to do the following:

1. **Transform** a basis to an orthonormal basis using the Gram-Schmidt method.
2. **Apply** the least squares approximation method to optimization problems.
3. **Compute** the determinant of a matrix in two ways.

Assigned Reading

- Chapter 4: Sections 4.3, 4.4
- Chapter 5: Sections 5.1, 5.2

Module Outline

In this module, we will cover the following:

+ A. Lecture Videos

+ B. Live Session

+ C. Assessments