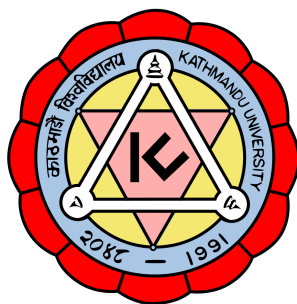


Linear Algebra

AIMA 104



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Text Book:

1. David C. Lay, Linear Algebra and Its Applications (4th edition), Pearson.
2. Gilbert Strang, Introduction to Linear Algebra, Wellesley-Cambridge Press.

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1.1 Introduction

To give a clear introduction of the course linear algebra, we need to look at it atleast from three sides, and consequently we can say that we can approach it from the following three sides.

1. Representation System

Linear Algebra is the algebra for Multivariable Calculus. The vectors and matrices are the building block of linear algebra. And linear algebra consists of the algebra of vectors and matrices, just like ordinary algebra is the algebra of numbers and their variables. Consider a multivariable function $f : \mathbb{R}^2 \mapsto \mathbb{R}^2$ defined by $f(x_1, x_2) = 3x_1 + 2x_2$. The concise representation of the multivariable functions give rise to vectors and matrices as follows:

Let, $\vec{x} = (x_1, x_2)$ and $\vec{a} = (3, 2)$. Then the above function is f is represented as $f(\vec{x}) = \vec{a}' \cdot \vec{x}$.