

MAT232 - Lecture 11

[Lesson Topic(s)]

AlexanderTheMango

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Definitions and Theorems

Straight from the textbook — no fluff, just what we need.

Quick recap before diving into the lecture.

Let's Get Started

Time to dive into the lecture notes.

Grab your pen or pencil, and let's break this down step by step.

Review of Last Lecture

(stuff goes here)

Section 4.4: Tangent Planes

Recall from 1st Year Calculus

Definition

Tangent lines are denoted by:

$$y = f(x) \quad \text{at} \quad x = x_0 \text{ (given)}$$

- Point $P = (x_0, f(x_0)) = (x_0, y_0)$
- Slope of tangent line: $m = f'(x_0)$
 - So at $x = x_0$, the slope of the tangent line is $f'(x_0) = m$

$$y - y_0 = m(x - x_0)$$

$$y = f'(x_0)(x - x_0) + f(x_0)$$

$$y = f(x_0) + f'(x_0)(x - x_0)$$

Remark

Note: The tangent line is a linear approximation of the function $f(x)$ near $x = x_0$. We will not be using this formula in this course, but it is good to know.