

Pre-Read Notes

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1 Chapter 1: Limits and Continuity

1.1 Tangent Lines

- Limit binds many concepts of Calculus together
- With $\frac{\delta y}{\delta x}$, you can approximate slopes
- But with curves, it no longer works well
- The closer you zoom in, say $\rightarrow \infty$ zoom creates a straight-ish line whose slope can now be approximated
- Recall calculating distance between 2 points is $\sqrt{(\delta y)^2 + (\delta x)^2}$
- Adding successive line segments will improve accuracy

1.2 Limits

- Given a function $f(x) = L$ where x gets close to a value a , this would be defined as "L is the limit of $f(x)$ as x approaches a "
- $\lim_{x \rightarrow a} f(x) = L$
- Restriction at $x=a$
- $\lim_{x \rightarrow a} f(x) = L$ Exists if and only if $\lim_{x \rightarrow a^-} f(x) = \lim_{x \rightarrow a^+} f(x) = L$

1.3 Computation of Limits

1.4 Continuity and Its Consequences

1.5 Limits Involving Infinity: Asymptotes

- We can express Asymptotes as Limits
- Ex: Reciprocal function