



Intro to Calculus 9-12 Syllabus

Course Goals

1 Introduce Calculus Skills

Students develop their mathematical knowledge and abilities as they gain an introduction to the field of Calculus.

2 Build Confidence

Students gain confidence in their abilities through practice and helpful feedback.

3 Adapt to Individual Strengths

Students will all have a chance to improve in a class that adapts to any and all levels of prior experience.

4 Make Connections

Students will utilize previous mathematical ideas and see each new concept builds on the last.

Course Topics

1 Limits and Continuity

Students explore the definition of mathematical limits, including notation and uses.

2 Derivatives and Applications

Students gain an introduction to the first major new concept of calculus, learning the origin and meaning of a derivative, and how it can be used to model situations from everyday life.

3 Integrals as Antiderivatives

Students learn the notation and representation of integrals, and how they function as the reverse of a derivative.

4 Definite and Indefinite Integrals

Students dive deeper into multiple types of integrals and explore the physical meaning, as well as learning new solving techniques.

5 The Fundamental Theorem of Calculus

Students explore one of the most core theorems in Calculus, applying it to everything they've learned so far.

6 Applications of Integrals

Students see how they can apply all of what they've learned so far into real-world situations and gain a glimpse of mathematical modeling.

Course Schedule

Day 1

Pre Test

Students take a pre-test to show their starting proficiency and help the instructor shape the course.

Course Introduction and Icebreakers

Students get to know their instructor and classmates, and learn about what the two weeks of the course will include.

Day 2

Limits and Continuity Lesson

Students learn the first major concepts of the course through guided instruction and examples.

Day 3

Derivatives Lesson

Students dive into Derivatives, covering meaning, syntax, and some basic uses.

Day 4

Applications of Derivatives Lesson

Students dive into Applications of Derivatives, exploring how we can use calculus for everyday problems.

Day 5

Midway Practice Test and Review

Students take a short practice test on what they've learned so far and review the answers as a class.

Day 6

Definite Integrals and the Fundamental Theorem Lesson

Students explore integrals further using the Fundamental Theorem of Calculus.

Day 7

Applications of Integrals Pt 1 Lesson

Students dive into Applications of Integrals, exploring how they can use integrals to solve new and unique problems.

Day 8

Applications of Integrals Pt 2 Lesson

Students continue with Applications of Integrals, extending their previous knowledge to modeling solid objects.

Day 9

Final Lesson Review

Students have the chance to pick one or two lessons they want reviewed before the post-test.

Day 10

Post Test

Students take a post-test to show what they've learned in the course.

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