

Unit 4: Applications of the Derivative

Content Area: **Math**
Course(s):
Time Period:
Length: **4 Weeks**
Status: **Published**

State Mandated Topics Addressed in this Unit

| <u>State Mandated Topics Addressed in this Unit</u> | |
|---|-----|
| N/A | N/A |

Applications of the Derivative

SC2- The course teaches all topics associated with Derivatives as delineated in the Calculus AB Topic Outline in the AP Calculus course description.

Learning Objectives

- Analysis of graphs using the first and second derivatives
- Extreme values
- Linearization models
- Optimization problems
- Relates rates
- Using the derivative

Essential Skills

- Concavity and points of inflection
- Critical values
- First derivative test for extrema
- Global (absolute) extrema
- Increasing and decreasing functions
- Local (relative) extrema
- Mean value Theorem
- Rolle's Theorem
- Second derivative test for extrema

Standards

| | |
|----------------|---|
| MA.9-12.II.C.3 | The Mean Value Theorem and its geometric interpretation |
| MA.9-12.II.D | Second derivatives |
| MA.9-12.II.D.3 | Points of inflection as places where concavity changes |
| MA.9-12.II.E | Applications of derivatives |
| MA.9-12.II.E.2 | Optimization, both absolute (global) and relative (local) extrema |

Instructional Tasks/Activities

- Activity 1
- Activity 10
- Activity 2
- Activity 3
- Activity 4
- Activity 5
- Activity 6
- Activity 7
- Activity 8
- Activity 9

Assessment Procedure

- Classroom Total Participation Technique
- Classwork
- DBQ
- Essay
- Exit Ticket/Entrance Ticket/Do Now
- Journal / Student Reflection
- Kahoot
- Other named in lesson
- Peer Review
- Performance
- Problem Correction
- Project
- Quiz
- Rubric
- Teacher Collected Data
- Test
- Worksheet

Recommended Technology Activities

- Appropriate Content Specific Online Resource
- Chromebook
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Gimkit
- GoGuardian
- Google Classroom
- Google Docs
- Google Forms
- Google Slides
- Kahoot
- MagicSchool AI
- Other- Specified in Lesson
- Quiziz
- Screencastify

Accommodations & Modifications & Differentiation

Accommodations and Modifications should be used to meet individual needs. Their IEP and 504 plans should be used in addition to the following suggestions.

Gifted and Talented

- Compare & Contrast
- Conferencing
- Debates
- Jigsaw
- Peer Partner Learning
- Problem Solving
- Structured Controversy
- Think, Pair, Share
- Tutorial Groups

Instruction/Materials

- alter format of materials (type/highlight, etc.)
- color code materials
- eliminate answers
- extended time
- extended time
- large print
- modified quiz
- modified test
- Modify Assignments as Needed
- Modify/Repeat/Model directions
- necessary assignments only
- Other (specify in plans)
- other- named in lesson
- provide assistance and cues for transitions
- provide daily assignment list
- read class materials orally
- reduce work load
- shorten assignments
- study guide/outline
- utilize multi-sensory modes to reinforce instruction

Environment

- alter physical room environment
- assign peer tutors/work buddies/note takers
- assign preferential seating
- individualized instruction/small group
- modify student schedule (Describe)
- other- please specify in plans
- provide desktop list/formula

Honors Modifications

Resources

- Calculus 10th Edition written by Ron Larson and Bruce Edwards 2014