

Welcome to AP Calculus 2021

Mr. Regan



AP Calculus BC

Mr. Regan

Agenda

- Who is Mr. Regan
- Grading Policy
- Calculus BC vs. Calculus AB
- What does my child need to do to be successful?
- Contact information





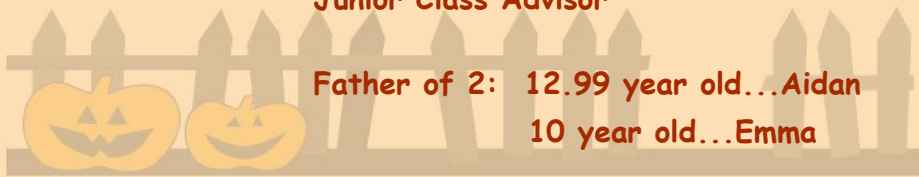
Class of 2000

23 Years at Sachem

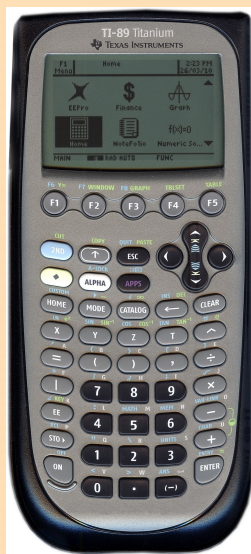
19 Years Teaching Calculus

**Boys Varsity Volleyball Coach
Middle School Boys Volleyball Coach
Junior Class Advisor**

**Father of 2: 12.99 year old...Aidan
10 year old...Emma**



The Ti-89 Titanium



- A graphing calculator will be required for this course.
- It will be provided by Sachem East.
- If your child requires a Ti-89 Titanium, please fill out the "Calculator Sign Out Sheet" located in the Class work section on Google classroom.



Grading Policy

- **Grading System:**
 - A. Tests (50 - 60 points)
 - B. DeltaMath/On-Line Assignments (5 - 10 points)
 - C. Quizzes (10-30 points)
 - D. Homework (50 points)



Underlined topics are BC only.

Unit Information

Unit I: Functions (7 days)

1. Properties of Functions
2. New functions from old
3. Families of functions
4. Mathematical models
5. Parametric equations

Unit II: Limits and Continuity (8 days)

1. An intuitive approach to limits
2. Computing limits
3. Computing limits: end behavior
4. Rigorous definition of a limit
5. Continuity
6. Limits and continuity of trigonometric functions

Unit III: The Derivative (16 days)

1. Slopes and rates of change
2. The derivative
3. Techniques of differentiation
4. Derivatives of trigonometric functions
5. The chain rule
6. Implicit differentiation
7. Related rates
8. Local linear approximation; differentials

Unit IV: Exponential, Logarithmic and Inverse Trigonometric Functions (10 days)

1. Inverse functions
2. Exponential and Logarithmic Functions
3. Derivatives of Logarithmic and Exponential Functions
4. Inverse Trigonometric Functions and their Derivatives

5. L'Hopital's Rule; Indeterminate Forms

Unit V: The Derivative in graphing and Applications (16 days)

1. Analysis of functions: Increase, Decrease, and Concavity
2. Relative Extrema: First and Second Derivative Tests
3. Using the Calculator in the Analysis of Functions
4. Rectilinear Motion
5. Absolute Maxima and Minima
6. Applied Maximum and minimum problems
7. Rolle's Theorem and The Mean Value Theorem

Unit VI: The Indefinite Integral (6 days)

1. An overview of the Area problem
2. The Indefinite Integral; Integral curves and Direction Fields
3. Integration by substitution
4. Sigma notation; Area as a limit

Unit VII: The Definite Integral (16 days)

1. Calculating distance and areas; Riemann Sums
2. Definite Integrals
3. The Fundamental Theorem of Calculus
4. Functions defined by Integrals; Accumulation functions
5. The Second Fundamental Theorem of Calculus
6. Numerical Integration: Midpoint, Left-End point, Right-End point, and Rule
7. Rectilinear Motion Revisited; Average Value

Unit VIII: Applications of the Definite Integral (14 days)

1. Area between two curves including regions bounded by Polar Curves
2. Volumes by slicing; disks and washers
- 3. Volumes by Cylindrical Shells**
- 4. Arc Length of a plane curve as well as parametric and polar curves**
- 5. Vector functions: velocity and acceleration**
- 6. Work**

Unit IX: Principles of Integral Evaluation (12 days)

1. Review of Integration formulas and substitutions
- 2. Integration by Parts**
3. Trigonometric integrals
- 4. Trigonometric substitutions**
- 5. Integrating Rational Functions by Partial Fractions**
- 6. Improper Integrals**

Unit X: Mathematical Modeling and Differential Equations (12 days)

1. First order differential equations and Modeling
2. Solving differential equations graphically: Slope Fields
- 3. Solving differential equations Numerically: Euler's Method**
4. Solving differential equations symbolically: Separation of variables
5. Exponential Growth and Decay models
6. Logistic Differential Equations

**Unit XI: Infinite Series (25 days)**

- 1. Maclaurin and Taylor Approximations**
- 2. Sequences**
- 3. Infinite Series**
- 4. Convergence tests**
- 5. Alternating series; conditional convergence**
- 6. Maclaurin and Taylor series; power series**
- 7. Convergence of Taylor series; Computational methods**
- 8. LaGrange Error Bound**
- 9. Differentiating and integrating power series**





- Be Here (Attendance Policy)
- Complete assignments
- Study new vocabulary
- Ask questions
- Come to Extra Help ...
- Stay Positive



Contact Information

EMAIL: rregan@go.sachem.edu

School Phone: 716-8201

