Anthony High School
Math Courses Syllabi

Teacher: Jorge Pinales

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Anthony High School

Teacher: Mr. Pinales

Subject: Adv. Algebra 2 Syllabus

First Semester

1st Nine Weeks

Unit 01: Introduction to Functions in Algebra II (15 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.2.A, A2.2.B, A2.2.C, A2.2.D, A2.7.I

Unit 02: Absolute Value Functions, Equations, and Inequalities (10 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.2.A, A2.6.C, A2.6.D, A2.6.E, A2.6.F

Unit 03: Systems of Linear Equations and Inequalities (12 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.3.A, A2.3.B, A2.3.E, A2.3.F, A2.3.G

2nd Nine Weeks

Unit 04: Expressions, Factoring, and Equations with Rational Exponents (13 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.7.B, A2.7.C, A2.7.D, A2.7.E, A2.7.G, A2.7.H

Unit 05: Quadratic Relations, Equations, and Inequalities (14 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.3.A, A2.3.C, A2.3.D, A2.4.A, A2.4.B, A2.4.D, A2.4.E, A2.4.F, A2.4.H, A2.7.A

Unit 06: Square Root Functions and Equations (8 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.2.A, A2.2.B, A2.2.C, A2.2.D, A2.4.C, A2.4.E, A2.4.F, A2.4.G, A2.7.H

Second Semester

3rd Nine Weeks

Unit 07: Cubic and Cube Root Functions and Equations (10 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.2.A, A2.2.B, A2.2.C, A2.2.D, A2.6.A, A2.6.B, A2.7.H

Unit 08: Rational Functions and Equations (15 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.2.A, A2.6.G, A2.6.H, A2.6.I, A2.6.J, A2.6.K, A2.6.L, A2.7.F

Unit 09: Exponential Functions and Equations (10 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.2.A, A2.5.A, A2.5.B, A2.5.D, A2.7.H

4th Nine Weeks

Unit 10: Exponential and Logarithmic Functions and Equations (10 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.2.A, A2.2.B, A2.2.C, A2.2.D, A2.5.A, A2.5.B, A2.5.C, A2.5.D, A2.5.E

Unit 11: Linear, Quadratic, and Exponential Data Models (5 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.8.A, A2.8.B, A2.8.C

Unit 12: Making Connections (10 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.2.A, A2.2.C, A2.3.B, A2.3.C, A2.3.F, A2.4.B, A2.4.C, A2.4.F, A2.5.A, A2.5.D, A2.6.B, A2.6.E, A2.6.F, A2.6.G, A2.6.I, A2.6.K, A2.6.L, A2.7.D, A2.7.E, A2.8.C

Unit 13: Exploring a Business Venture (10 days)

TEKS: A2.1.A, A2.1.B, A2.1.C, A2.1.D, A2.1.E, A2.1.F, A2.1.G A2.3.A, A2.3.B, A2.3.C, A2.3.E, A2.3.G, A2.4.E, A2.4.F, A2.5.B, A2.5.D, A2.6.L, A2.8.C

Anthony High School

Teacher: Mr. Pinales

Subject: AP Calculus AB Syllabus

First Semester

1st Nine Weeks

Unit 1: Calculus Preparation

Review of Algebra/Precalculus topics:

1. Piecewise Defined Functions
2. Even/Odd Functions
3. Slopes/Equations of Lines
4. Solving Linear, Quadratic, Trigonometric Equations
5. Domain/Range
6. Simplifying Rational Expressions

Unit 2: Limits and Their Properties 1. Finding limits graphically and numerically

2. Finding limits analytically
3. Properties of limits
4. Continuity on open and closed intervals
5. Intermediate Value Theorem
6. Limits at infinity

2nd Nine Weeks

Unit 3: Differentiation

1. Limit definition of the derivative of a function
2. Finding the equation of a tangent line
3. Differentiability

4. Basic Differentiation Rules
    a. Constant
    b. Power
    c. Sum/Difference
    d. Sine/Cosine
5. Derivatives involving motion (velocity and acceleration)
6. Product Rule
7. Quotient Rule
8. Higher Ordered Derivatives
9. Chain Rule

Unit 4: Applications of Differentiation

1. Extrema on an interval a. Open vs. Closed intervals
2. Extreme Value Theorem
3. Critical Values
4. Mean Value Theorem
5. Rates of Change a. Instantaneous vs. Average
6. Intervals of Increasing/Decreasing Functions
7. First Derivative Test
8. Finding Relative Extrema Values
9. Definition of Concavity
10. Finding Intervals of Concavity
11. Finding Inflection Points
12. Limits at Infinity
13. Definition of Horizontal Asymptotes
14. Graphing using Derivative Tests
15. Solving Optimization Problems

Second Semester

3rd Nine Weeks

Unit 4: Applications of Differentiation (continued from 2nd. 9 weeks)

Unit 5: Integration

1. Antiderivatives
2. Solving Differential Equations a. General vs. Particular Solutions
3. Basic Integration Rules
4. Finding Area—Riemann Sums
5. Finding Area—Number of Rectangles goes to Infinity
6. Definition of the Definite Integral
7. Properties of Definite Integrals
8. 1 st Part of the Fundamental Theorem of Calculus
9. Applications of the Definite Integral
10. Finding Average Value of a Function
11. Definite Integrals as Area Accumulator Functions
12. 2 nd Part of the Fundamental Theorem of Calculus
13. Integration using Substitution
14. Numerical Integration
    a. Trapezoid Rule
    b. Simpson's Rule

4th Nine Weeks

Unit 6: Logarithmic and Exponential Functions

1. Differentiation of the Natural Logarithmic Function
2. Integration of the Natural Logarithmic Function
3. Derivatives of Inverse Functions
4. Differentiation of Exponential Functions
5. Integration of Exponential Functions
6. Derivatives of Bases other than e
7. Applications of Logarithmic and Exponential Functions

8. Solving Growth and Decay Problems a. Newton’s Law of Cooling

9. Using Separation of Variables to Solve Differential Equations

10. Slope Fields

11. The Logistic Equation

12. Differentiation of Inverse Trigonometric Functions

13. Integration of Inverse Trigonometric Functions

Unit 7: Applications of Integration

1. Finding Area between two curves

2. Finding Volume using Disk Method

3. Finding Volume using Washer Method

4. Finding Volume using Known Cross-Sections

Anthony High School

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Subject: College Prep. Math Syllabus

First Semester

1st Nine Weeks

Learning outcome 1: Properties of real numbers/arithmetic operations/geometric theorems and formulas

1.1 Order of operation, evaluating expressions

1.2 Square roots of perfect numbers

1.3 Solve/interpret problems using percentages

1.4 Estimation

1.5 Perimeter, area, volume

Learning outcome 2: Graph/solve linear equations

2.1 solve absolute value equations and inequalities

2.2 Solve linear equations and inequalities

2.3 Plot ordered pairs/graph linear equations

2.4 Graph linear equations/inequalities in two variables

2.5 Find intercepts graphically and algebraically

2.6 Find the slope of a line/write equations of lines

2nd Nine Weeks

Learning objective 3: Solve systems of equations

3.1 Solve systems of linear equations by graphing

3.2 Solve systems by substitution

3.3 Solve systems by eliminations

Learning objective 4: Operations of polynomial functions/scientific notation

4.1 Simplify expressions with exponents

4.2 Perform arithmetic operations of polynomials

4.3 Solve problems using scientific notation

Learning objective 5: Financial literacy

5.1 Understanding consumer debt factors

5.2 Different types of compounding methods

5.3 Analyze quantitative information and its impact on population

Second Semester

3rd Nine Weeks

Learning objective 1: Function notation in algebraic and graphical contexts

1.1 Interpret function notation/evaluate functions using function notation

Learning objective 2: Rational, radical, quadratic expressions/equations

2.1 Factoring techniques for polynomial expressions

2.2 Solve quadratic equations by factoring

2.3 Arithmetic operations of rational expressions

2.4 Simplify complex fractions

2.5 Solve equations involving rational expressions

2.6 Simplify radical expressions and expressions with rational exponents

2.7 Arithmetic operations of radical expressions/ solve radical equations

4th Nine Weeks

Learning objective 3: Quadratic graphs, equations, and inequalities

3.1 Operations with complex numbers

3.2 Solve quadratic equations using different algebraic techniques

3.3 Graph quadratic equations/inequalities

Learning objective 4: Application of functions

4.1 Solve application problems of functions using different contexts

Learning objective 5: Counting principles and probability

5.1 Interpret probability within a finite sample space

5.2 Compute and interpret the probability of an event and its compliment

5.3 Compute and interpret the probability of compound events

5.4 Interpret two-way tables

Anthony High School

Teacher: Mr. Pinales

Subject: Pre-Calculus Syllabus

First Semester

1st Nine Weeks

Unit 01: Graphs, Attributes, and Applications of Functions (14 days)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.2.D, P.2.F, P.2.I, P.2.J, P.2.L, P.2.M, P.2.N

Unit 02: Composition and Inverses of Functions (11 days)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.2.A, P.2.B, P.2.C, P.2.E

Unit 03: Polynomial and Power Functions, Equations, and Inequalities (13 days)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.2.F, P.2.G, P.2.I, P.2.J, P.2.N, P.5.J, P.5.K

2nd Nine Weeks

Unit 04: Rational Functions, Equations, and Inequalities (12 days)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.2.F, P.2.G, P.2.I, P.2.J, P.2.K, P.2.L, P.2.M, P.2.N, P.5.L

Unit 05: Exponential and Logarithmic Functions and Equations (10 days)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.2.E, P.2.F, P.2.G, P.2.I, P.2.J, P.2.N, P.5.G, P.5.H, P.5.I

Unit 06: Sequences, Series, and Binomial Expansion (10 days)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.5.A, P.5.B, P.5.C, P.5.D, P.5.E, P.5.F

Second Semester

3rd Nine Weeks

Unit 07: Problem Solving with Trigonometric Ratios (10 days)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.2.P, P.4.E, P.4.F, P.4.G, P.4.H

Unit 08: Trigonometric Functions (15 days)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.2.E, P.2.F, P.2.G, P.2.H, P.2.I, P.2.O, P.2.P, P.4.A, P.4.B, P.4.C, P.4.D, P.4.E, P.4.F

Unit 09: Trigonometric Equations and Identities (10 days)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.5.M, P.5.N

Unit 10: Vectors (8 days for entire unit)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.4.C, P.4.F, P.4.I, P.4.J, P.4.K

4th Nine Weeks

Unit 10: Vectors (continued) (8 days for entire unit)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.4.C, P.4.F, P.4.I, P.4.J, P.4.K

Unit 11: Parametric Equations (7 days)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.3.A, P.3.B, P.3.C

Unit 12: Polar Equations (6 days)

TEKS: P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.3.D, P.3.E

Unit 13: Conics (16 days)

TEKS:P.1.A, P.1.B, P.1.C, P.1.D, P.1.E, P.1.F, P.1.G P.3.B, P.3.C, P.3.D, P.3.F, P.3.G, P.3.H, P.3.I