Calculus1084 Alfred State Unit 1 – Functions, Limits, and Continuity     12th grade     Mike Pavlock

– Functions, Quadratics, and Inequalities

Vocabulary:

Least Integer Function

Mathematical model

Domain

Range

Exponential Growth

Limit

Sandwich Thorem

Infinite Limits

Horizontal Asymptote

Vertical Asymptote

Slant Asymptote

Delta/Epsilon

Resources: (Text Alignment):

Thomas Calculus Early Transendentals 11th edition

Pearson Education 2008

Assessments

Test #1 from Alfred State

Nightly graded homework assignment

Questioning during class

Class Participation

Prioritized Math Content Target Standards (70%):

Non-Prioritized Math Content Target Standards:

Digital Mathematical Tools:

SmartBoard

TI 84 Calculators

TI Smartview

Math websites related to each topic

Targeted Standards for Mathematical Practice

Understand limit of a function     Define continuity of a function     Determine limits of function

Determine continuity of function     Understand all types of discontinuities     Take one sided limits

Take limits approaching infinity     Determine horizontal, vertical, and slant asymptotes

Perform a delta/epsilon proof     Define and demonstrate the sandwich theorem

| Unit Topic or Title, District, Grade Level, Teacher Name: |
|---|

Calculus1084 Alfred State Unit 2 – Differentiation   Grade 12    Mike Pavlock

| Assessments | Prioritized Math Content Target Standards (70%): |
|---|---|
| Test #2 from Alfred State | |
| Nightly graded homework assignment | |
| Questioning during class | |
| Class Participation | |
| | Non-Prioritized Math Content Target Standards: |

**Vocabulary:**

Derivative

Product Rule

Quotient Rule

L'Hospital's Rule

Instantaneous

Marginal Cost

Marginal Revenue

Composite Function

Chain Rule

Implicit

Parametric

Related Rate

Differentiable

**Resources: (Text Alignment):**

Thomas Calculus Early Transendentals 11th edition

Pearson Education 2008

**Digital Mathematical Tools:**

SmartBoard

TI 84 Calculators

TI Smartview

Math websites related to each topic

Targeted Standards for Mathematical Practice

Understand multiple notations for derivatives        Take a derivative using the limit definition

Learn and apply basic derivative rules        Learn product and quotient rule        Use Chain rule when taking a derivative

Use implicit differentiation        Apply L'Hospital's Rule        Understand derivatives of power functions

Determine if a function is differentiable at specific values        Solve related rate problems

| Unit Topic or Title, District, Grade Level, Teacher Name: | | Vocabulary: | Resources: (Text Alignment): |
|---|---|---|---|

**Unit Topic or Title, District, Grade Level, Teacher Name:**

Calculus1084 Alfred State Unit 3 – Applications of Derivatives  Grade 12    Mike Pavlock

**Assessments**

Test #3 from Alfred State

Nightly graded homework assignment

Questioning during class

Class Participation

**Prioritized Math Content Target Standards (70%):**

**Non-Prioritized Math Content Target Standards:**

**Vocabulary:**

Mean Value Theorem

Absolute extrema

Relative extrema

First derivative test

Second derivative test

Point of Inflection

Concavity

Critical numbers

Max and min problem

Linear Approximation

Monotonic Function

Optimization

Newton's method

**Resources: (Text Alignment):**

Thomas Calculus Early Transendentals 11th edition

Pearson Education 2008

**Digital Mathematical Tools:**

SmartBoard

TI 84 Calculators

TI Smartview

Math websites related to each topic

**Targeted Standards for Mathematical Practice**

Understand and apply the mean value theorem        Find absolute maximum and minimum values of a function

Find relative maximum and minimum values of a function        Sketch a function given values of first and second derivative

Understand and apply the first and second derivative test on a function        Find points of inflection using second derivative

Determine when functions are increasing and decreasing        Set up equations and solve optimization problems

Solve linear approximation problems

| Unit Topic or Title, District, Grade Level, Teacher Name: | | Vocabulary: | Resources: (Text Alignment): |

**Unit Topic or Title, District, Grade Level, Teacher Name:**

Calculus1084 Alfred State Unit 4 – Integration    Grade 12    Mike Pavlock

| **Assessments** | **Prioritized Math Content Target Standards (70%):** |
| --- | --- |
| Test #4 from Alfred State | |
| Nightly graded homework assignment | |
| Questioning during class | |
| Class Participation | |

**Vocabulary:**

Integral

Antiderivative

Riemann Sum

Subinterval

Area under the curve

Instantaneous Velocity

Displacement Equation

Sigma Notation

Finite Sums

Definite Integral

Indefinite Integral

Substitution Rule

Area between curves

Fundamental Theorem of Calculue

**Resources: (Text Alignment):**

Thomas Calculus Early Transendentals 11th edition

Pearson Education 2008

**Non-Prioritized Math Content Target Standards:**

**Digital Mathematical Tools:**

SmartBoard

TI 84 Calculators

TI Smartview

Math websites related to each topic

**Targeted Standards for Mathematical Practice**

Find the average value of a function in given intervals        Evaluate indefinite Integrals using basic integration rules

Evaluate definite integrals      Evaluate integrals using substitution (both definite and indefinite)

Use Reimann sums with multiple subintervals to estimate area under a curve        Apply the fundamental theorem of calculus

Find acceleration and velocity of particles       Find displacement equations