Glen Ridge Public Schools –Mathematics Curriculum

Course Title: Pre-Calculus CP

Subject: Mathematics

Grade Level: 11/ 12

Duration: Full Year

Prerequisite: Algebra II grade of "B" or higher

Elective or Required: Elective

Mathematics Mission Statement

Mathematics is an integral part of our lives. Students must be actively involved in their mathematics education through the use of modeling and demonstrating the ability to persevere through problem solving. The mathematics curricula will emphasize critical thinking skills through a balance of logic and reasoning, attention to precision by utilizing patterns and structure, and bridging these ideas to cross-curricular learning. Students will be engaged and challenged in a student-centered learning environment that is developmentally appropriate and will communicate mathematical ideas, both in a verbal and written form. Through effectively applying hands-on manipulatives, basic computation skills and the use of technical writing to justify their processes, students will critique the work of themselves and others.

Course Description:
Pre- Calculus is the course students take between Algebra II and Calculus. It focuses primarily on trigonometry but it also covers the other major topics students need in Calculus. Such topics include polar coordinates, conics, and sequences and series. Strong emphasis is placed on graphs of functions and problem solving without a calculator. Pre- Calculus prepares the students for high school Calculus as well as college Calculus I.

Author: Cluny Mendez and Cathy McCarthy
Date Submitted: Summer 2017

Course Name Pre-Calculus

Topic/Unit: Counting Principle, Probability & Statistics

Approximate # Of Weeks: 3

Essential Questions:
- What is the importance of counting events?
- What are the differences between permutation and combinations?
- What is meant by the word "probability?"
- How do we calculate probabilities?
- Why the mean, median, and mode are called the measures of central tendency?
- What are the two statistics used to describe the spread of data about the mean?
- What is expected value?
- What does the standard value or z-score of a value determine?
- How do you recognize uniform, skewed, and normal distributions?
- What is meant by the "Normal Curve"?
- How do you determine the percent of data within a given interval for a normal distribution?
- How can you find the percentiles for a normal distribution?

NJ STUDENT LEARNING STANDARDS: S-ID A. 2,3,4, S-CP A.1, 2, B.7,8,9, D-MF S.1,2,3,4, B.5a,b,6,7

Upon completion of this unit students will be able to:
- Use the multiplication principle of counting, permutations, or combinations to count the number of ways that a task can be done.
- Identify a sample space and calculate probabilities with equally likely or unequally likely outcomes.
- Use counting techniques and properties of probability to solve probability problems.
- Distinguish between independent, dependent and mutually exclusive events.
- Find measures of Central Tendency
- Use measures of Central Tendency to make decisions.
- Set up a probability distribution for a random variable
- Calculate and interpret expected value
- Use expected value to determine a "fair game"
- Use the calculator to find the standard deviation of a set of data
- Interpret what standard deviation tells you about the spread or variability of a data set.

- Find and interpret the z-score of a data value
- Understand the meaning behind the term "Normal Curve"
- Solve problems using properties of a normal distribution.

Interdisciplinary Standards
- 9.1 21st Century Life and Career Skills
- 8.1 Computer and Information Literacy
- 8.2 Technology Education
- 5.1 Science Practice

Activities:
- Assignments and announcements will be delivered through Google Classroom and/or Web Assign
- Smartboard Lessons will be used to relay notes to students
- Students will read, view tutorials and study material presented in Web Assign.
- Students will take notes on instructor's lecture and participate in class discussions.
- Instructor will provide opportunity for both guided and independent practice.
- Students will complete given classwork and homework assignment reviewing solutions through Web Assign.
- Homework assignments will be discussed to insure a good understanding of the prerequisites.
- Technology: the graphing calculator will be integrated into various exercises to help the student visualize the problems.
- Students will be asked to make conclusions after working through explorations scattered throughout the unit.
- Small group cooperative learning in reviewing homework will be utilized.
- Optional Project: The Probability of Games
- Case Study: Birth Weights in America

Enrichment Activities:
- Kahoot
- Focus on Modeling: The Monte Carlo Method

Methods of Assessments/Evaluation:
- Written quizzes
- Worksheets
- Responses to discussion questions
- Homework
- Classwork
- Verbal Assessment
- Think/Pair/Share
- Exit slips
- Games involving movement
- Self -Assessment

- Independent work
- Observation

Resources/Including Online Resources:
- Teacher Webpage
- Google Classroom
- Web Assign via individual student access codes
- Class Notes
- Powerpoint Presentations
- Worksheets
- Kahn Academy

Learning Goal Scale

4 Student will be able to calculate and make decisions using Normal Probabilities and expected value
3 Student will be able to recognize when it is appropriate to use either permutations or combinations to solve probability problems
2 Student will use calculator to find mean and standard deviation of data set
1 Student will recognize the shape of a Normal Curve

Pre-Calculus

Topic/Unit: Matrices

Approximate # Of Weeks: 1 week

Essential Questions:
What are the necessary properties of matrices that are going to get added or subtracted?
What is different about multiplying matrices from multiplying other quantities?
How are matrices used in real world applications?

NJCCS: N-VM 6, 7, 8, 9, 10, 11, 12.

Upon completion of this unit students will be able to:
- Perform basic matrix addition, subtraction, scalar multiplication and multiplication or determine that such operations are impossible.
- Use matrices to represent data.
- Find the inverse of a matrix and use it to solve matrix equations.

Interdisciplinary Standards (njcccs.org)
- 9.1 21st Century Life and Career Skills
- 9.3 Career Awareness, Exploration, and Preparation
- 8.2 Technology Education
- 5.1 Science Practice

Activities – include 21st Century Technologies:
- Assignments and announcements will be delivered through Google Classroom and/or Web Assign
- Smartboard Lessons will be used to relay notes to students
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- Students will take notes on instructor's lecture and participate in class discussions.
- Instructor will provide opportunity for both guided and independent practice.
- Students will complete given classwork and homework assignment reviewing solutions through Web Assign.
- Homework assignments will be discussed to insure a good understanding of the prerequisites.
- Technology: the graphing calculator will be integrated into various exercises to help the student visualize the problems.
- Students will be asked to make conclusions after working through explorations scattered throughout the unit.
- Small group cooperative learning in reviewing homework will be utilized.

Enrichment Activities:
- Use the Ti-83 or 84 graphing calculator to multiply matrices.

- Communication matrices activity.

Methods of Assessments/Evaluation:
- Written quizzes
- Worksheets
- Responses to discussion questions
- Homework
- Classwork
- Verbal Assessment
- Think/Pair/Share
- Exit slips
- Games involving movement
- Self -Assessment
- Independent work
- Observation

Resources/Including Online Resources
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- Class Notes
- Powerpoint Presentations
- Worksheets
- Kahn Academy

Learning Goal Scale

4   Student will be able to use properties of matrices to solve equations
3   Student will be able to use matrices to represent data
2   Student will be able to multiply matrices
1   Student will be able to add and subtract matrices

Pre-Calculus

Topic/Unit: Exponential and Logarithmic Functions

Approximate # Of Weeks: 3 weeks

Essential Questions:
What is the form of an exponential function?
What does the graph of an exponential function look like?
What is the natural exponential function?
How does the natural exponential function relate to other exponential functions?
What is the definition of the logarithmic function?
What is the relationship between logarithmic functions and exponential functions?
What are the properties of logarithms?
What does the graph of a logarithmic function look like?
What is the natural log function?
How does the natural log function relate to the exponential function?
What are the properties of natural logs?
What are the laws of logs and how do you use them?
How do you use laws of logs to exponential and logarithmic functions to solve equations?

NJCCS: A-SSE 3, 4, 5. A-APR 2, 3, 4. A-REI 1, 2, 3, 4, 5, 6, 7, 10, 11, 12. F-IF 1, 2, 3, 4, 5, 6, 7, 8, 9. F- BF 1a, 1c, 3, 4, 5. F-LE 1, 2, 3, 4, 5

Upon completion of this unit students will be able to:
- Graph exponential and logarithmic functions.
- Explain the forms of exponential and logarithmic functions.
- Explain the differences between exponential and logarithmic functions.
- Use the laws of logs to expand and condense log expressions.
- Solve exponential and logarithmic equations.

Interdisciplinary Standards (njccs.org)
- 9.1 21st Century Life and Career Skills
- 9.3 Career Awareness, Exploration, and Preparation
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- 5.1 Science Practice

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- Students will take notes on instructor's lecture and participate in class discussions.
- Instructor will provide opportunity for both guided and independent practice.

- Students will complete given classwork and homework assignment reviewing solutions through Web Assign.
- Homework assignments will be discussed to insure a good understanding of the prerequisites.
- Technology: the graphing calculator will be integrated into various exercises to help the student visualize the problems.
- Students will be asked to make conclusions after working through explorations scattered throughout the unit.
- Small group cooperative learning in reviewing homework will be utilized.

Enrichment Activities:
- Problem solving with compound interest.

Methods of Assessments/Evaluation:
- Written quizzes
- Worksheets
- Responses to discussion questions
- Homework
- Classwork
- Verbal Assessment
- Think/Pair/Share
- Exit slips
- Games involving movement
- Self -Assessment
- Independent work
- Observation

Resources/Including Online Resources
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- Kahn Academy

Learning Goal Scale

4 Student will be able to solve exponential and log equations
3 Student will be able to use the laws and properties of exponential and logarithmic functions to manipulate expressions
2 Student will be able to graph the basic exponential and log functions
1 Student will be able to explain forms of exponential and log functions

Pre- Calculus

Topic/Unit: Trigonometric Functions: Unit Circle Approach

Approximate # Of Weeks: 5 weeks

Essential Questions:
- What is the Unit Circle?
- How is the unit circle used to describe the trigonometric functions?
- How is the unit circle used to determine the trigonometric values?
- Why are some of the trig functions undefined at certain values?
- How is the Pythagorean Theorem used to establish the fundamental trig identities?
- How do you graph the 6 trig functions on the coordinate plane?
- How do transformations affect the graphs of the basic trig functions?

NJ STUDENT LEARNING STANDARDS: A-CED 2, 3, 4. A-REI 1. F-IF 1, 2, 3, 4. F-BF 3, 4. F-TF 1, 2, 3, 4, 5, 6, 7, 8. G-SRT 7, 8. G-GPE 1, 4.

Upon completion of this unit students will be able to:
- Given either an x or a y, use the equation of the unit circle to find coordinates of points on the circle
- Use the unit circle to find the terminal point determined by a real number t
- Define the 3 basic trigonometric functions with respect to the unit circle
- Use the unit circle to evaluate the 6 trigonometric ratios for specified values.
- Find the unknown trigonometric function ratios given the value of one trig ratio
- Identify the correct quadrant and sign, positive or negative, of either the sine or cosine value for a given real number t
- Develop and apply the reciprocal and Pythagorean trigonometric identities
- Graph sine, cosine and tangent functions
- Identify the domain and range of a the 6 trigonometric functions
- Graph transformations of the sine, cosine and tangent graphs
- Graph the cosecant, secant and cotangent functions
- Identify the period, amplitude, (where appropriate) and phase shift of the sine, cosine and tangent functions from both their equations and graphs

Interdisciplinary Standards (njcccs.org)
- 9.1 21st Century Life and Career Skills
- 8.2 Technology Education
- 5.1 Science Practice

Activities – include 21st Century Technologies:
- Assignments and announcements will be delivered through Google Classroom and/or Web Assign

- Smartboard Lessons will be used to relay notes to students
- Students will read, view tutorials and study material presented in Web Assign.
- Students will take notes on instructor's lecture and participate in class discussions.
- Instructor will provide opportunity for both guided and independent practice.
- Students will complete given classwork and homework assignment reviewing solutions through Web Assign.
- Homework assignments will be discussed to insure a good understanding of the prerequisites.
- Technology: the graphing calculator will be integrated into various exercises to help the student visualize the problems.
- Students will be asked to make conclusions after working through explorations scattered throughout the unit.
- Small group cooperative learning in reviewing homework will be utilized.
- Students will practice drawing their own unit circle repeatedly until complete mastery is achieved.
- Review Activity: Trig Bee

Enrichment Activities:
- Kahoot
- Focus on Modeling: Fitting Sinusoidal Curves to Data

Methods of Assessments/Evaluation:
- Written quizzes
- Worksheets
- Responses to discussion questions
- Homework
- Classwork
- Verbal Assessment
- Think/Pair/Share
- Exit slips
- Self-Assessment
- Independent work
- Observation

Resources/Including Online Resources
- Teacher Webpage
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- Class Notes
- Powerpoint Presentations
- Worksheets
- Kahn Academy
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Learning Goal Scales:

I

4   If t is a real number and P(x,y) is the terminal point determined by t, the student will be able to write equations that define each of the six trigonometric functions of t

3   Student will be able to find the trigonometric values of 0, $\pi/6$, $\pi/4$, $\pi/3$, $\pi/2$, π, $3\pi/2$, 2π and all their multiples using the unit circle

2   Student will be able to locate of 0, $\pi/6$, $\pi/4$, $\pi/3$, $\pi/2$, π, $3\pi/2$, 2π and all their multiples on the unit circle

1   Student will define the six trigonometric functions in terms of the terminal point on the unit circle

II

4   Given a trigonometric expression or equation containing more than one trig function, student will simplify it using either reciprocal or Pythagorean identities

3   Student will find all trigonometric functions from the value of only one given

2   Student will write one trigonometric function in terms of another

1   Student will state both the reciprocal and Pythagorean identities for trigonometric functions

III

4   Student will write equations for a sine or cosine curve given a transformed graph

3   Student will recognize transformations and graph a sine or cosine curve given its equation

2   Student will be able to pick out from a given trigonometric equation the correct period, amplitude and phase shift for either the sine or cosine functions

1   Student will be able to graph one cycle of each of the 6 trigonometric functions

Pre-Calculus

Topic/Unit: Right Triangle Approach

Approximate # Of Weeks: 5 weeks

Essential Questions:
How do you convert from radians to degrees and degrees to radians?
What are the two types of circular motion and how do you find each?
What are the six trig functions and how do they relate to right triangles?
What are the values of the six trig functions for each of the special angle values in degrees?
What does it mean to solve a right triangle?
How do you describe the angle of elevation and angle of depression?
How do you find the area of a triangle given two sides and the included angle?
What are the Law of Sines and the Law of Cosines?

NJCCS: A-CED 2, 3, 4. A-REI 1. F-IF 1, 2, 3, 4. F-BF 3, 4. F-TF 1, 2, 5, 6, 7, 8. G-SRT 7, 8, 9, 10, 11.

Upon completion of this unit students will be able to:
- Convert between degrees and radians.
- Draw a parallel between degrees and radians.
- Solve any right triangle.
- Use the Pythagorean identities and the basic trig functions to problems solve.
- Calculate inverse trig function problems in terms of degrees.
- Solve problems involving angles of depression and angles of elevation.
- Use the Law of Sines and the Law of Cosines to solve triangles and problem solve.

Interdisciplinary Standards (njcccs.org)
- 9.1 21st Century Life and Career Skills
- 8.2 Technology Education
- 5.1 Science Practice

Activities – include 21st Century Technologies:
- Assignments and announcements will be delivered through Google Classroom and/or Web Assign
- Smartboard Lessons will be used to relay notes to students
- Students will read, view tutorials and study material presented in Web Assign.
- Students will take notes on instructor's lecture and participate in class discussions.
- Instructor will provide opportunity for both guided and independent practice.

- Students will complete given classwork and homework assignment reviewing solutions through Web Assign.
- Homework assignments will be discussed to insure a good understanding of the prerequisites.
- Technology: the graphing calculator will be integrated into various exercises to help the student visualize the problems.
- Students will be asked to make conclusions after working through explorations scattered throughout the unit.
- Small group cooperative learning in reviewing homework will be utilized.
- Students will make a right triangle trig reference sheet.

Enrichment Activities:
- Comparing the different speeds and rpms of tires of different sizes.
- Kahoot

Methods of Assessments/Evaluation:
- Written quizzes
- Worksheets
- Responses to discussion questions
- Homework
- Classwork
- Verbal Assessment
- Think/Pair/Share
- Exit slips
- Games involving movement
- Self -Assessment
- Independent work
- Observation

Resources/Including Online Resources
- Teacher Webpage
- Google Classroom
- Web Assign via individual student access codes
- Class Notes
- Powerpoint Presentations
- Worksheets
- Kahn Academy

Learning Goal Scale

4   Student will be able to use Law of Sines and Law of Cosines to problem solve
3   Student will be able to problem solve with angle of elevation and angle of depression

2   Student will be able to solve right triangles and convert between degrees and radians

1   Student will be able to find the values of the six trig functions for the special values in degrees

Pre- Calculus

Topic/Unit: Analytic Trigonometry

Approximate # Of Weeks: 5 weeks

Essential Questions:
- What does it mean to prove an identity?
- How are the sum/difference, double & half angle identities derived from the basic Pythagorean and reciprocal trigonometric identities?
- How are proving or verifying trigonometric identities different from solving a trigonometric equation?
- What is meant by the solution to a trigonometric equation?
- How can we use identities to simplify the process involved in solving a trigonometric equation?
- How can quadratic techniques be used to solve a trigonometric equation?
- What is the significance of a restricted domain when solving trigonometric equations?
- How do we represent multiple solutions on a given domain?

NNJ STUDENT LEARNING STANDARDS: A-CED 2, 3. A-REI 1. F-IF 1, 2, 3, 4. F-BF 3, 4. F-TF 1, 2, 5, 6, 7, 8, 9.

Upon completion of this unit students will be able to:
- Find the exact value of a trigonometric function using sum/difference, double or half-angle formulas
- Use the sum/difference or double angle formulas to simply expressions
- Use the sum/difference or double angle formulas to verify trigonometric identities.
- Apply strategies to verify identities
- Use fundamental trigonometric identities to solve trigonometric equations.
- Use quadratic techniques to solve trigonometric equations.
- Work with a variety of techniques to solve trigonometric equations
- Generate the complete solution of a trigonometric equation given an unrestricted domain
- Generate the complete solution of trigonometric equations for a specified domain
- Use a calculator to solve equations that cannot be solved by hand.

Interdisciplinary Standards (njcccs.org)
- 9.1 21st Century Life and Career Skills
- 8.2 Technology Education
- 5.1 Science Practice

Activities – include 21st Century Technologies:

- Lab Activity: Students will investigate the connection with using the calculator to solve trigonometric equations graphically and their analytical solutions
- Assignments and announcements will be delivered through Google Classroom and/or Web Assign.
- Smartboard Lessons will be used to relay notes to students.
- Students will read, view tutorials and study material presented in Web Assign.
- Students will take notes on instructor's lecture and participate in class discussions.
- Instructor will provide opportunity for both guided and independent practice.
- Students will complete given classwork and homework assignment reviewing solutions through Web Assign.
- Homework assignments will be discussed to insure a good understanding of the prerequisites.
- Technology: the graphing calculator will be integrated into various exercises to help the student visualize the problems.
- Students will be asked to make conclusions after working through explorations scattered throughout the unit.
- Small group cooperative learning in reviewing homework will be utilized.

Enrichment Activities:
- Kahoot
- Focus on Modeling: Traveling and Standing Waves

Methods of Assessments/Evaluation:
- Written quizzes and unit test
- Worksheets
- Responses to discussion questions
- Homework
- Classwork
- Verbal Assessment
- Think/Pair/Share
- Exit slips
- Written quizzes
- Self-Assessment exercises
- Independent work
- Observations

Resources/Including Online Resources
- Teacher Webpage
- Google Classroom
- Web Assign via individual student access codes
- Class Notes
- Powerpoint Presentations
- Worksheets

- Kahn Academy

Learning Goal Scale:
4   The student will simplify, verify and solve problems using trigonometric identities
3   The student will use the sum/difference, double-angle formulas for sine, cosine and tangent formulas to solve trigonometric equations on a specified domain
2   The student will solve a basic trigonometric equation using simple algebraic techniques
1   The student will use an appropriate sum/difference, double or half-angle formula, to evaluate a trigonometric function value

Pre-Calculus

Topic/Unit: Vectors

Approximate # Of Weeks: 2 weeks

Essential Questions:
What is the magnitude of a vector and how can it be represented?
How do vectors relate to the Pythagorean Theorem?
What are the algebraic operations on vectors and how are they used?
What are the properties of vectors?
What are examples of vectors seen out of the classroom?
How do you represent the components of vectors?
How do you calculate the work done by a force moving along a vector?

NJCCS: N-VM 1, 2, 3, 4, 5.

Upon completion of this unit students will be able to:
- Draw vectors on graph paper.
- Find the magnitude of vectors.
- Use properties of vectors to calculate new vectors.
- Find the components of vectors.
- Find the angle formed by two vectors.
- Find the work done by a force in a moving object.

Interdisciplinary Standards (njcccs.org)
- 9.1 21st Century Life and Career Skills
- 9.1 Career Awareness, Exploration, and Preparation
- 8.2 Technology Education
- 5.1 Science Practice

Activities – include 21st Century Technologies:
- Assignments and announcements will be delivered through Google Classroom and/or Web Assign
- Smartboard Lessons will be used to relay notes to students
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- Students will take notes on instructor's lecture and participate in class discussions.
- Instructor will provide opportunity for both guided and independent practice.
- Students will complete given classwork and homework assignment reviewing solutions through Web Assign.
- Homework assignments will be discussed to insure a good understanding of the prerequisites.
- Technology: the graphing calculator will be integrated into various exercises to help the student visualize the problems.

- Students will be asked to make conclusions after working through explorations scattered throughout the unit.
- Small group cooperative learning in reviewing homework will be utilized.

Enrichment Activities:
- How are vectors seen around us every day?

Methods of Assessments/Evaluation:
- Written quizzes
- Worksheets
- Responses to discussion questions
- Homework
- Classwork
- Verbal Assessment
- Think/Pair/Share
- Exit slips
- Games involving movement
- Self -Assessment
- Independent work
- Observation

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- Worksheets
- Kahn Academy

Learning Goal Scale

4   Student will be able to find the work done by a force moving a vector
3   Student will be able to find the angle formed by two vectors
2   Student will be able to find the magnitude of a vector
1   Student will be able to add vectors, subtract vectors, and draw vectors

Pre-Calculus

Topic/Unit: Polar Coordinates

Approximate # Of Weeks: 2 weeks

Essential Questions:
What is the relationship between Polar and Rectangular Coordinates?
What are the variables in polar equations and what do they represent?
How do the graphs of polar equations differ from the graphs of rectangular equations?
What is the significance of DeMoivre's Theorem and why is it helpful?

NJCCS: N-CN 1, 3, 4, 5, 6

Upon completion of this unit students will be able to:
- Convert points and equations back and forth between Polar and Rectangular forms.
- Graph Polar Equations.
- Use DeMoivre's Theorem in problem solving.

Interdisciplinary Standards (njcccs.org)
- 9.1 21st Century Life and Career Skills
- 8.2 Technology Education
- 5.1 Science Practice

Activities – include 21st Century Technologies:
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- Instructor will provide opportunity for both guided and independent practice.
- Students will complete given classwork and homework assignment reviewing solutions through Web Assign.
- Homework assignments will be discussed to insure a good understanding of the prerequisites.
- Technology: the graphing calculator will be integrated into various exercises to help the student visualize the problems.
- Students will be asked to make conclusions after working through explorations scattered throughout the unit.
- Small group cooperative learning in reviewing homework will be utilized.
- Matching graphs/equations.
- Graphing on Polar Axis.
- Using ti-83 plus or ti-84 graphing calculator to graph Polar Equations

- Students will work in groups and independently to solve problems.

Enrichment Activities:
- Research on Mathematicians: DeMoivre, Agnesi, Galilei.

Methods of Assessments/Evaluation:
- Written quizzes
- Worksheets
- Responses to discussion questions
- Homework
- Classwork
- Verbal Assessment
- Think/Pair/Share
- Exit slips
- Games involving movement
- Self -Assessment
- Independent work
- Observation

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Learning Goal Scale

4 Student will be able to use DeMoivre's Theorem in problem solving
3 Student will be able to graph polar equations
2 Student will be able to convert back and forth between rectangular and polar forms
1 None

Pre-Calculus

Topic/Unit: Functions

Approximate # Of Weeks: 2 weeks

Essential Questions:
What is a function?
How do you calculate the average rate of change of a function over a given interval?
What is a one- to- one function and what is its significance?
How do you find an inverse of a function?
How do you prove two functions are inverses of each other?
What are the basic polynomial functions and what do their graphs look like?

Upon completion of this unit students will be able to:
- Define a function.
- Find the average rate of change over an interval.
- Find the inverse of a function.
- Prove two functions are inverses.
- Graph polynomial functions.

NJCCS: A-SSE 3, 4, 5. A-APR 2, 3, 4. A-REI 1, 2, 3, 4, 5, 6, 7, 10, 11, 12. F-IF 1, 2, 3, 4, 5, 6, 7, 8, 9. F- BF 1a, 1c, 3, 4, 5. F-LE 1, 2, 3, 4, 5

Interdisciplinary Standards (njcccs.org)
- **9.1 21st Century Life and Career Skills**
- **9.1 Career Awareness, Exploration, and Preparation**
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- Instructor will provide opportunity for both guided and independent practice.
- Students will complete given classwork and homework assignment reviewing solutions through Web Assign.
- Homework assignments will be discussed to insure a good understanding of the prerequisites.
- Technology: the graphing calculator will be integrated into various exercises to help the student visualize the problems.

- Students will be asked to make conclusions after working through explorations scattered throughout the unit.
- Small group cooperative learning in reviewing homework will be utilized.

Enrichment Activities:
- Line of best fit activity.

Methods of Assessments/Evaluation:
- Written quizzes
- Worksheets
- Responses to discussion questions
- Homework
- Classwork
- Verbal Assessment
- Think/Pair/Share
- Exit slips
- Games involving movement
- Self -Assessment
- Independent work
- Observation

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Learning Goal Scale

4 Student will be able to find a function's inverse and prove they are inverses
3 Student will be able to graph the basic parent functions
2 Student will be able to find the average rate of change
1 Student will be able to define a function.