

Black Horse Pike Regional School District Curriculum Template

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Course Name: Pre-Calculus & Pre-Calculus Honors

Course Number: 034300 & 034200

PART I: UNIT RATIONALE

WHY ARE STUDENTS LEARNING THIS CONTENT AND THESE SKILLS?

Course/Unit Title: Topics in Analytic Geometry Chapter 9	Unit Summary: In Chapter 9, students are introduced to polar forms for writing and graphing equations. They use polar coordinates to represent and solve problems.
Grade Level(s): 10-12	Students also work with these coordinates and equations by converting them from polar form to rectangular form and vice versa. They use the polar equations to identify each type of specific polar graph. Finally, students will use specific math vocabulary associated with analytic geometry.
Essential Question(s): <ul style="list-style-type: none"> How do you describe the position of a point in a plane using distance and angle rather than x- and y-coordinates? How do you sketch graphs of polar equations? 	Enduring Understanding(s): <ul style="list-style-type: none"> Plot points and find multiple representations of points in the polar coordinate system. Convert points from rectangular to polar form and vice versa. Convert equations from rectangular to polar form and vice versa. Recognize special polar graphs.

PART II: INSTRUCTIONAL STRATEGIES AND RESOURCES

DESCRIBE THE LEARNING TARGETS.

After each target, identify the New Jersey Student Learning Standards that are applicable.

<u>Learning Target</u>	<u>NJSLS</u>
1. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases...	1. NJSLS-F-IF.C.7
2. Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	2. NJSLS-F-TF.A.1 3. NJSLS-F-TF.A.2
3. Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.	4. NJSLS-F-TF.A.3
4. Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for $\pi-x$, $\pi+x$, and $2\pi-x$ in terms of their values for x , where x is any real number.	5. NJSLS-F-TF.A.4
5. Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.	

Inter-Disciplinary Connections:

Mathematical Modeling:

1. Students can use polar coordinates to model the path of a passenger car on a Ferris wheel.
2. Students can use graphs of polar equations to recognize the sound pickup pattern of a microphone in the polar coordinate system.

Students will engage with the following text:

Pre-Calculus with a limits: A Graphing Approach 7e By Ron Larson

Resources: Course mate; a variety of technology tools and other texts as per teacher discretion.

Students will write:

Students will write notes and copy class examples to better comprehend the skills being taught. Students will write solutions to open-ended math problems and word problems dealing with real-world applications. Students will graph interpretations of functions.

PART III: TRANSFER OF KNOWLEDGE AND SKILLS

DESCRIBE THE LEARNING EXPERIENCE.

How will students uncover content and build skills.

Section 9.5

	Regular	Honors
Standards for Mathematical Practice	MP 1- Make sense of problems and persevere in solving them MP 2- Reason abstractly and quantitatively MP 3- Construct viable arguments and critique MP 4- Model with mathematics MP 5- Use appropriate tools strategically MP 6- Attend to precision MP 7- Look for and make use of structure MP 8- Look for and express regularity in repeated reasoning.	MP 1- Make sense of problems and persevere in solving them MP 2- Reason abstractly and quantitatively MP 3- Construct viable arguments and critique MP 4- Model with mathematics MP 5- Use appropriate tools strategically MP 6- Attend to precision MP 7- Look for and make use of structure MP 8- Look for and express regularity in repeated reasoning.
Practice and Apply Assigning Homework (Tasks are assigned as per discretion of the teacher)	Day 1: pp. 681 Exs. 3-8, 9-41 odd Day 2: pp. 682 Exs. 43-57 odd, 71-87 odd, 91-94, 97-100	Day 1: pp. 681 Exs. 3, 4, 12-42 even Day 2: pp. 682 Exs. 44-58 even, 57-66, 72-80 even, 83-88, 93, 94, 97-100

Section 9.6

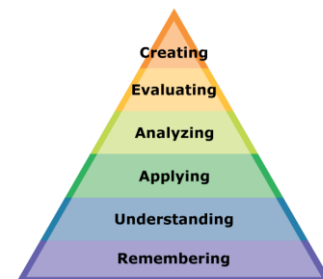
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Practice and Apply Assigning Homework (Tasks are assigned as per discretion of the teacher)	Day 1: pp. 689-690 Exs. 1-14, 31-35 odd	Day 1: pp. 689-690 Exs. 1-14, 31-36

PART IV: EVIDENCE OF LEARNING

IDENTIFY THE METHODS BY WHICH STUDENTS WILL DEMONSTRATE THEIR UNDERSTANDING OF CONTENT AND THEIR ABILITY TO APPLY SKILLS.

IDENTIFY BLOOM'S LEVELS.

Formative Assessments:



The effectiveness of the instructional program will be based on numerous activities and strategies including the following: teacher observations, students collaborating with peers, questioning strategies, student record-keeping, quizzes, exit/admit assignments, peer/self- assessments, learning/response logs, discussion and practice presentations

Accommodations/Modifications:

As per IEP or 504 Plan.

Summative Assessments:

The following assessments will be used to evaluate student learning, skill acquisition and academic achievement of the Standards of Mathematical Practice and the New Jersey Learning Standards for Mathematics listed under each chapter in the Pre-Calculus curriculum/syllabus at the conclusion of an instructional time period.

- Diagnostic Pre-Test

- Chapter Tests
- Periodic Benchmark Tests
- End-of-Course Assessment
- Standardized Tests

Accommodations/Modifications:

As per IEP or 504 Plan.

Performance Assessments:

The following assessments require students to utilize various strands of mathematics.

- Projects
- Performance Tasks
- Homework
- Classwork

Accommodations/Modifications:

As per IEP or 504 Plan.