PACE ACADEMY
PRECALCULUS
CURRICULUM GUIDE
S.Y. 2020-2021

Most Essential Learning Competencies	General Mathematics Lessons
FIRST QUARTER	
Illustrate the different types of conic sections: parabola, ellipse, circle, hyperbola, and degenerate cases	Lesson 1.1 Introduction to Conic Sections and Circles
Define a circle	
Determine the standard form of equation of a circle	
Graph a circle in a rectangular form of equation of a circle	
Solve Situational problems involving circles	
Define a parabola	Lesson 1.2 Parabolas
Determine the standard form of equation of a parabola	
Graph a parabola in a rectangular coordinate system	
Solve situational problems involving parabolas	
Define an ellipse	Lesson 1. 3 Ellipses
Determine the standard form of equation of an ellipse	
Graph an ellipse in a rectangular coordinate system	
Solve situational problems involving ellipses	
Define a hyperbola	Lesson 1.4 Hyperbolas
Determine the standard form of equation of a hyperbola	
Graph a hyperbola in a rectangular coordinate system	
Solve situational problems involving hyperbolas	
Recognized the equation and important characteristics of the different types of conic sections	Lesson 1.5 More Problems on Conic Sections
Solve situational Problems involving conic sections	
Illustrate systems of nonlinear equations	Lesson 1.6 Systems of Nonlinear Equations
Determine the solutions of systems of nonlinear equations using techniques such as substitution, elimination, and graphing	
Solve situational problems involving systems of nonlinear equations.	
SECOND QUARTER	
Illustrate series	Lesson 2.1 Review of Sequences and Series
Differentiate a series from a sequence	
Use the sigma notation to represent series	Lesson 2.2 Sigma Notation

Illustrate the principle of Mathematical Induction	Lesson 2.3 Mathematical Induction
Apply mathematical induction in proving identities	
Illustrate Pascal's Triangle in the expansion of $(x + y)^n$ for small positive integral values of n	Lesson 2.4 The Binomial Theorem
Prove the Binomial Theorem	
Determine any term in $(x + y)^n$, where n is a positive integer, without expanding	
Solve problems using mathematical induction and the Binomial Theorem	
Illustrate the unit circle and the relationship between linear and angular measures of arcs in a unit circle	Lesson 2.5 Angles in a Unit Circle
Convert degree measure to radian measure, and vice versa	
Illustrate angles in standard position and coterminal angles	
Illustrate the different circular functions	Lesson 2.6 Circular Functions
Use reference angles to find exact values of circular functions	
Determine the domain and range of the different circular functions	Lesson 2.7 Graphs of Circular Functions and Situational Problems
Graph the six circular functions with its amplitude, period, and phase shift	
Solve situational problems involving circular functions	
Determine whether an equation is an identity or a conditional equation	Lesson 2.8 Fundamental Trigonometric Identities
Derive the fundamental trigonometric identities	
Simplify trigonometric expressions using fundamental trigonometric identities	
Prove other trigonometric identities using fundamental trigonometric identities	
Derive trigonometric identities involving sum and difference of two angles	Lesson 2.9 Sum and Difference Identities
Simplify trigonometric expressions using fundamental trigonometric identities and sum and difference identities	
Prove other trigonometric identities using fundamental identities and sum and difference identities	
Solve situational problems involving trigonometric identities	
Derive the double-angle and half angle identities	Lesson 2.10 Double-angle and Half-angle Identities
Simplify trigonometric expressions using known identities	
Prove other trigonometric identities using known identities	

Solve situational problems involving trigonometric identities	
Graph the basic inverse trigonometric functions	Lesson 2.11 Inverse Trigonometric Functions
Illustrate the domain and range of the inverse trigonometric functions	
Evaluate inverse trigonometric expressions	
Solve situational problems involving inverse trigonometric functions	
Solve trigonometric equations	Lesson 2.12 Trigonometric Equations
Solve situational problems involving trigonometric equations	
Locate points in polar coordinate system	Lesson 2.13 Polar Coordinate System
Convert the coordinates of a point from rectangular to polar system and vice versa	
Solve situational problems involving polar coordinate system	

Reference:
Soaring 21st Century Mathematics: PreCalculus (2017). Phoenix Publishing House,, Inc.

Time Allotment: Five (5) synchronous sessions (40 minutes per session); Five (5) asynchronous sessions (40 minutes per session)

Promotion/Retention:
- Assessments will be categorized as the following with the corresponding weight:
    - Short Quizzes (20%)
    - Written Outputs (35%)
    - Product and Performance Tasks (45%)
- **Short Quizzes**. These include summative assessments after every lesson, group of related lessons, or chapter.
- **Written Outputs**. These include data recording and analyses, geometric and statistical analyses, graphs, charts, or maps, problem sets, and surveys.
- **Product and Performance Tasks**. TThese include diagrams, mathematical investigatory projects, models or making models of geometric figures, number representations, constructing graphs from survey conducted, multimedia presentation, outdoor math, probability experiments, problem-posing, reasoning and proof through recitation, using manipulatives to show math concepts or solve problems, and using measuring tools and devices.