**COURSE DESCRIPTION**

**Course Title:** Honors PreCalculus

**Course Number:** 00271

**Course Prerequisites:** Grade of 80% or higher in Algebra II Honors and Honors Geometry

**Course Description:** Honors Pre-Calculus is an academic course designed primarily for students who plan to enter college and pursue a program of studies in mathematics or a mathematically related field such as engineering, accounting, or pre-medicine. Major topics include the study of functions and graphs (quadratic, polynomial, rational, exponential, logarithmic, and trigonometric), analytic trigonometry, and analytic geometry. District marking period assessments are required.

**Suggested Grade Level**: Grades 11-12

**Length of Course:** Two Semesters

**Units of Credit:** 1

**PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:**

CSPG #50 Mathematics (7-12)

To find the CSPG information, go to [CSPG](https://www.education.pa.gov/Educators/Certification/Staffing%20Guidelines/Pages/default.aspx)

**Certification verified by the WCSD Human Resources Department:** Yes No

**WCSD STUDENT DATA SYSTEM INFORMATION**

**Course Level:** Honors & Dual Enrollment (1) GPA +5%

**Mark Types:** Check all that apply.

F – Final Average MP – Marking Period EXM – Final Exam

**GPA Type**:  GPAEL-GPA Elementary  GPAML-GPA for Middle Level  NHS-National Honor Society

UGPA-Non-Weighted Grade Point Average  GPA-Weighted Grade Point Average

**State Course Code**: 02110

To find the State Course Code, go to [State Course Code](https://nces.ed.gov/forum/sced.asp), download the Excel file for *SCED*, click on SCED 6.0 tab, and choose the correct code that corresponds with the course.

**TEXTBOOKS AND SUPPLEMENTAL MATERIALS**

**Board Approved Textbooks, Software, and Materials:**

**Title:**  *Pre-Calculus with Limits: A Graphing Approach with CalcChat and CalcView, 8e*

**Publisher:** Cengage Learning

**ISBN #:**  978-1-337-90428-5

**Copyright Date:** 2020

**WCSD Board Approval Date:** 6/29/2020

**Supplemental Materials:** Kuta Software, SAS pdesas.org, Khan Academy, IXL, Brainfuse,   
 Online Calculator: Desmos, Graphing Calculator: TI-89 Titanium  
 \*Precalculus: Functions & Graphs, 13e, Cengage.   
 (\*CHS: University of Pittsburgh, Bradford Campus)

**Curriculum Document**

**WCSD Board Approval:**

**Date Finalized:** 5/23/2022

**Date Approved:**  6/26/2022

**Date(s) Revised:**  6/15/2023

**Implementation Year:** 2022-2023

**SPECIAL EDUCATION, 504, and GIFTED REQUIREMENTS**

The teacher shall make appropriate modifications to instruction and assessment based on a student’s Individual Education Plan (IEP), Chapter 15 Section 504 Plan (504), and/or Gifted Individual Education Plan (GIEP).

**SCOPE AND SEQUENCE OF CONTENT, AND CONCEPTS**

**Marking Period 1: Functions and Their Graphs, and Polynomial and Rational Functions**

* Lines in the Coordinate Plane
* Functions
* Graphs of Functions
* Transformation of Graphs
* Combinations of Functions
* Quadratic Functions
* Polynomial Functions of Higher Degree
* Real Zeros of Polynomial Functions
* Complex Numbers
* The Fundamental Theorem of Algebra
* Review: Operations of Rational Functions
* Rational Functions and Asymptotes
* Graphs of Rational Functions
* Quadratic Models
* **Marking Period 1 Review and Assessment**

**Marking Period 2: Exponential – Logarithmic Functions and Equations, and Trigonometric   
 Functions**

* Exponential Functions and Their Graphs
* Logarithmic Functions and Their Graphs
* Properties of Logarithms
* Exponential and Logarithmic Equation: Solving
* Exponential and Logarithmic Models
* Nonlinear Models
* Radian and Degree Measure
* Trigonometric Functions: The Unit Circle
* Right Triangle Trigonometry
* Trigonometric Functions of Any Angle
* Graphs of Sine and Cosine Functions
* **Marking Period 2 Review and Assessment**

**Marking Period 3: Trigonometric Functions, Analytic Trigonometry, Law of Sines and   
 Law of Cosines**

* Graphs of Other Trigonometric Functions
* Inverse Trigonometric Functions
* Application and Models of Trigonometric Functions
* Fundamental Identities
* Verification of Trigonometric Identities
* Trigonometric Equations
* Sum and Difference Formulas
* Multiple-Angle and Product-to-Sum Formulas
* Law of Sines
* Law of Cosines
* **Marking Period 3 Review and Assessment**

**Marking Period 4: Linear Systems, \*Systems of Inequalities, and Matrices, and Analytic Geometry**

* Systems of Equations: Solving
* Systems of Linear Equations in Two Variables
* \*Systems of Inequalities
* Multivariable Linear Systems
* Matrices and Systems of Equations
* Operations with Matrices
* The Inverse of a Square Matrix
* The Determinant of a Square Matrix
* Circles and Parabolas
* Ellipses
* Hyperbolas
* **Marking Period 4 Review and Assessment**

\*Included for CHS(College in the High School) through the University of Pittsburgh, Bradford campus

**Standards/Eligible Content and Skills**

| **Performance Indicator** | **PA Core Standard and/or Eligible Content** | **Marking Period Taught** |
| --- | --- | --- |
| Find the distance between two points in the coordinate plane | CC.2.2.HS.C.2 | MP1 |
| Find the midpoint of a line segment | CC.2.2.HS.C.2 | MP1 |
| Sketch the graph of an equation | CC.2.2.HS.C.2  CC.2.2.HS.D.10 | MP1 |
| Find the slope and the equation of a line | CC.2.2.HS.D.10 | MP1 |
| Sketch the graph of a line | CC.2.2.HS.C.2 CC.2.2.HS.D.10 | MP1 |
| Identify functions | CC.2.2.HS.C.6 | MP1 |
| Explain why a given relation is not a function | CC.2.2.HS.C.6  CC.2.2.HS.D.10 | MP1 |
| Evaluate functions for given values of the independent variable | CC.2.2.HS.D.3 | MP1 |
| Sketch the graph of each of the following basic functions: identity, square, cubic, square root, reciprocal, absolute value | CC.2.2.HS.C.2 | MP1 |
| Graph any given function using transformation and other graphing techniques | CC.2.2.HS.C.2  CC.2.2.HS.C.4 | MP1 |
| Operate on functions: add, subtract, multiply, divide, and compose | CC.2.2.HS.D.1  CC.2.2.HS.D.3 | MP1 |
| Analyze graphs of quadratic functions | CC.2.2.HS.C.5  CC.2.2.HS.D.7  CC.2.2.HS.D.10 | MP1 |
| Write quadratic functions in standard form and use the results to sketch graphs of functions | CC.2.2.HS.D.10 | MP1 |
| Find minimum and maximum values of quadratic functions in real-world and mathematical problems | CC.2.2.HS.C.6  F-IF.7A | MP1 |
| Use transformations to sketch graphs of polynomial functions | CC.2.2.HS.C.4  F-BF.3 | MP1 |
| Use the Leading Coefficient Test to graph end behavior of polynomial functions | F-IF.7C | MP1 |
| Find and use zeros of polynomial functions as sketching aides | CC.2.2.HS.D.4  F-IF.7C | MP1 |
| Use the Intermediate Value Theorem to locate zeros of polynomial functions | CC.2.2.HS.D.4 | MP1 |
| Use long division to divide polynomials by other polynomials | CC.2.2.HS.D.3  A-APR.6 | MP1 |
| Use synthetic division to divide polynomials by binomials | CC.2.2.HS.D.3  A-APR.2 | MP1 |
| Use the remainder and factor theorems | CC.2.2.HS.D.3  A-APR.2 | MP1 |
| Use the Rational Zero Test to determine possible rational zeros of polynomial functions | CC.2.2.HS.D.3 | MP1 |
| Use the Descartes’ Rules of Signs and the upper and lower bounds to find real zeros of polynomials | CC.2.2.HS.D.3 | MP1 |
| Use the imaginary unit i to write complex numbers | CC.2.1.HS.F.6 | MP1 |
| Add, subtract, and multiply complex numbers | CC.2.1.HS.F.6 | MP1 |
| Use complex conjugates to write the quotient of two complex numbers in standard form | CC.2.1.HS.F.6 | MP1 |
| Find the complex solutions of quadratic equations | CC.2.1.HS.F.7 | MP1 |
| Use the Fundamental Theorem of Algebra to determine the number of zeros of a polynomial function | CC.2.2.HS.D.4 | MP1 |
| Find all zeros of polynomial functions | CC.2.2.HS.D.4 | MP1 |
| Find conjugate pairs of complex zeros | CC.2.2.HS.D.4 | MP1 |
| Find zeros of polynomials by factoring | CC.2.2.HS.D.4 | MP1 |
| Review: Add, subtract, multiply, and divide rational functions | CC.2.2.HS.D.6  A-APR.6 | MP1 |
| Find the domains of rational functions | F-IF.5  F-IF.7 | MP1 |
| Find the vertical and horizontal asymptotes of rational functions | CC.2.2.HS.C.2  F-IF.7  F-IF.7D | MP1 |
| Use rational functions to model and solve real-world and mathematical problems | CC.2.2.HS.C.2  CC.2.2.HS.C.6 | MP1 |
| Analyze and sketch graphs of rational functions | CC.2.2.HS.C.2  F-IF.7 | MP1 |
| Sketch graphs of rational functions that have slant asymptotes | F-IF.7  F-IF.7D | MP1 |
| Use graphs of rational functions to model and solve real-world and mathematical problems | CC.2.2.HS.C.2  CC.2.2.HS.C.6  F-IF.7 | MP1 |
| Classify quadratic scatterplots | CC.2.2.HS.C.5  S-ID.6 | MP1 |
| Use a graphing utility to find quadratic models of data from a scatterplot | CC.2.2.HS.C.6  S-ID.6 | MP1 |
| Determine the quadratic model that best fits a set of data | CC.2.2.HS.C.6  S-ID.6 | MP1 |
| **Marking Period 1 Review and Assessment** |  | **MP1** |
| * Review and demonstrate knowledge of Functions and Their Graphs |  | MP1 |
| * Review and demonstrate knowledge of Polynomial and Rational Functions |  | MP1 |
| Recognize and evaluate exponential functions with base a | CC.2.2.HS.C.2  CC.2.2.HS.C.6  F-LE.4 | MP2 |
| Graph exponential functions with base a | F-IF.7E | MP2 |
| Recognize, evaluate, and graph exponential functions with  base e | CC.2.2.HS.C.2  CC.2.2.HS.C.6  F-IF.7E  F-LE.4 | MP2 |
| Use exponential functions to model and solve real-world and mathematical problems | CC.2.2.HS.C.5  CC.2.2.HS.C.6 | MP2 |
| Recognize and evaluate logarithmic functions with base a | CC.2.2.HS.C.2  CC.2.2.HS.C.6  F-LE.4 | MP2 |
| Graph logarithmic functions with base a | F-IF.7E | MP2 |
| Recognize, evaluate, and graph natural logarithmic functions | CC.2.2.HS.C.2  CC.2.2.HS.C.6  F-IF.7E  F-LE.4 | MP2 |
| Use logarithmic functions to model and solve real-world and mathematical problems | CC.2.2.HS.C.5  CC.2.2.HS.C.6 | MP2 |
| Rewrite logarithms with different bases | CC.2.2.HS.D.2  F-BF.5 | MP2 |
| Use properties of logarithms to evaluate/review logarithmic expressions | CC.2.2.HS.D.2  F-BF.5 | MP2 |
| Use properties of logarithms to expand/condense logarithmic expressions | CC.2.2.HS.D.2  F-BF.5 | MP2 |
| Use logarithmic functions to model and solve real-world and mathematical problems | CC.2.2.HS.C.5  CC.2.2.HS.C.6  F-BF.5 | MP2 |
| Solve simple exponential and logarithmic equations | CC.2.2.HS.C.5  CC.2.2.HS.D.2 | MP2 |
| Solve more complicated exponential equations | CC.2.2.HS.C.5  CC.2.2.HS.D.2 | MP2 |
| Solve more complicated logarithmic equations | CC.2.2.HS.C.5  CC.2.2.HS.D.2 | MP2 |
| Model and solve real-world and mathematical problems using exponential and logarithmic equations | CC.2.2.HS.C.5  CC.2.2.HS.C.6  CC.2.2.HS.D.2 | MP2 |
| Recognize the five most common types of models of exponential and logarithmic functions | CC.2.2.HS.C.6  F-IF.8B | MP2 |
| Model and solve real-world and mathematical problems applying exponential growth and exponential decay functions | CC.2.2.HS.C.6  F-IF.8B | MP2 |
| Model and solve real-world and mathematical problems applying Gaussian functions | CC.2.2.HS.C.6  F-IF.8B | MP2 |
| Model and solve real-world and mathematical problems applying logistic growth functions | CC.2.2.HS.C.6  F-IF.8B | MP2 |
| Model and solve real-world and mathematical problems applying logarithmic functions | CC.2.2.HS.C.6  F-IF.8B | MP2 |
| Classify exponential and logarithmic scatterplots | CC.2.2.HS.C.5  S-ID.6 | MP2 |
| Use a graphing utility to find exponential and logarithmic models of data from a scatterplot | CC.2.2.HS.C.6  S-ID.6A | MP2 |
| Determine the exponential or logarithmic model that best fits a set of data | CC.2.2.HS.C.6  S-ID.6A | MP2 |
| Use a graphing utility to find exponential and logistic models for data | CC.2.2.HS.C.6  S-ID.6 | MP2 |
| Describe angles | G-CO.1 | MP2 |
| Use radian measure | F-TF.1 | MP2 |
| Use degree measure and convert between degrees and radians | F-TF.1 | MP2 |
| Model and solve real-world and mathematical problems using angles | CC.2.3.HS.A.14 | MP2 |
| Identify and describe the unit circle and its relationship to real numbers | CC.2.2.HS.C.7  F-TF.2 | MP2 |
| Evaluate trigonometric functions using the unit circle | CC.2.2.HS.C.7  F-TF.2 | MP2 |
| Use the domain and period to evaluate sine and cosine functions | CC.2.2.HS.C.7  F-TF.3 | MP2 |
| Use a calculator to evaluate trigonometric functions | F-TF.7 | MP2 |
| Evaluate trigonometric functions of acute angles and use a graphing calculator to evaluate the trigonometric functions | CC.2.3.HS.A.7  F-TF.3 | MP2 |
| Evaluate trigonometric functions of any angle | CC.2.2.HS.C.9  F-TF.2  G-SRT.8 | MP2 |
| Find reference angles | CC.2.2.HS.C.1  CC.2.2.HS.C.9  F-TF.2  G-SRT.8 | MP2 |
| Evaluate trigonometric functions of real numbers | CC.2.2.HS.C.9  F-TF.2  G-SRT.8 | MP2 |
| Sketch the graphs of basic sine and cosine functions | CC.2.2.HS.C.8  F-IF.7 | MP2 |
| Use the amplitude and period to sketch the graphs of the sine and cosine functions | CC.2.2.HS.C.8  F-IF.7 F-TF.5 | MP2 |
| Sketch translations of the graphs of sine and cosine functions | CC.2.2.HS.C.4  CC.2.2.HS.C.8  F-BF.3 F-IF.7  F-TF.5 | MP2 |
| Use sine and cosine functions to model real-world data | CC.2.2.HS.C.8  CC.2.3.HS.A.14  F-TF.5  G-SRT.8 | MP2 |
| **Marking Period 2 Review and Assessment** |  | **MP2** |
| * Review and demonstrate knowledge of  Exponential – Logarithmic Functions |  | MP2 |
| * Review and demonstrate knowledge of Trigonometric Functions |  | MP2 |
| Sketch the graphs of tangent functions | CC.2.2.HS.C.4  CC.2.2.HS.C.8  F-BF.3 F-IF.7  F-TF.5 | MP3 |
| Sketch the graphs of cotangent functions | CC.2.2.HS.C.4  CC.2.2.HS.C.8  F-BF.3  F-IF.7  F-TF.5 | MP3 |
| Sketch the graphs of secant and cosecant functions | CC.2.2.HS.C.4  CC.2.2.HS.C.8  F-BF.3  F-IF.7  F-TF.5 | MP3 |
| Sketch the graphs of damped trigonometric functions | CC.2.2.HS.C.4  CC.2.2.HS.C.8  F-BF.3  F-IF.7  F-TF.5 | MP3 |
| Evaluate and graph inverse sine functions | CC.2.2.HS.C.4  CC.2.2.HS.C.8  F-TF.5  F-TF.6 | MP3 |
| Evaluate and graph the other inverse trigonometric functions | CC.2.2.HS.C.4  CC.2.2.HS.C.8  F-TF.5  F-TF.6 | MP3 |
| Evaluate compositions of trigonometric functions | CC.2.2.HS.C.4  CC.2.2.HS.C.8  F-TF.6 | MP3 |
| Solve real-world and mathematical problems involving right triangles | CC.2.2.HS.C.3  CC.2.3.HS.A.7  CC.2.3.HS.A.14  G-SRT.8 | MP3 |
| Solve real-world and mathematical problems involving directional bearings | CC.2.2.HS.C.3  CC.2.3.HS.A.7  CC.2.3.HS.A.14  G-SRT.8 | MP3 |
| Solve real-world and mathematical problems involving harmonic motion | CC.2.2.HS.C.3  CC.2.3.HS.A.7  CC.2.3.HS.A.14  G-SRT.8 | MP3 |
| Recognize and write the Fundamental Trigonometric Identities | CC.2.2.HS.C.1  CC.2.2.HS.C.6  F-TF.8 | MP3 |
| Use the Fundamental Trigonometric Identities to evaluate trigonometric functions, simplify trigonometric expressions, and rewrite trigonometric expressions | CC.2.2.HS.C.1  CC.2.2.HS.C.6  F-TF.8 | MP3 |
| Verify trigonometric identities | CC.2.2.HS.C.1  CC.2.2.HS.C.6  F-TF.8 | MP3 |
| Use standard algebraic techniques to solve trigonometric equations | CC.2.2.HS.D.10  F-TF.7 | MP3 |
| Solve trigonometric equations of the quadratic type | CC.2.2.HS.D.10  F-TF.7 | MP3 |
| Solve trigonometric equations involving multiple angles | CC.2.2.HS.D.10  F-TF.7 | MP3 |
| Use inverse trigonometric functions to solve trigonometric equations | CC.2.2.HS.C.1  F-TF.7 | MP3 |
| Use the sum and difference formulas to evaluate trigonometric functions, verify trigonometric identities, and solve trigonometric equations | CC.2.2.HS.C.1  CC.2.2.HS.D.2  F-TF.9 | MP3 |
| Use multiple-angle formulas to rewrite and evaluate trigonometric functions | CC.2.2.HS.C.1  CC.2.2.HS.D.2  F-TF.9 | MP3 |
| Use power-reducing formulas to rewrite and evaluate trigonometric functions | CC.2.2.HS.C.1  CC.2.2.HS.D.2  F-TF.9 | MP3 |
| Use half-angle formulas to rewrite and evaluate trigonometric functions | CC.2.2.HS.C.1  CC.2.2.HS.D.2  F-TF.9 | MP3 |
| Use product-to-sum and sum-to-product formulas to rewrite and evaluate trigonometric functions | CC.2.2.HS.C.1  CC.2.2.HS.D.2  F-TF.9 | MP3 |
| Use the Law of Sines to solve oblique triangles: AAS, ASA, SSA | CC.2.3.HS.A.14  G-SRT.10 | MP3 |
| Find areas of oblique triangles | CC.2.3.HS.A.14  G-SRT.10  G-SRT.11 | MP3 |
| Model and solve real-world and mathematical problems applying the Law of Sines | CC.2.3.HS.A.14  G-SRT.10  G-SRT.11 | MP3 |
| Use the Law of Cosines to solve oblique triangles: SSS, SAS | CC.2.3.HS.A.14  G-SRT.10 | MP3 |
| Model and solve real-world and mathematical problems applying the Law of Cosines | CC.2.3.HS.A.14  G-SRT.10  G-SRT.11 | MP3 |
| Use Heron’s Area Formula to find the area of triangles | CC.2.3.HS.A.14 | MP3 |
| **Marking Period 3 Review and Assessment** |  | **MP3** |
| * Review and demonstrate knowledge of Trigonometric Functions |  | MP3 |
| * Review and demonstrate knowledge of Analytic Trigonometry |  | MP3 |
| * Review and demonstrate knowledge of the Law of Sines and the Law of Cosines |  | MP3 |
| Use the methods of substitution and graphing to solve systems of equations in two variables | CC.2.2.HS.D.10 | MP4 |
| Use systems of equations to model and solve real-world and mathematical problems | CC.2.2.HS.C.6  CC.2.2.HS.D.10 | MP4 |
| Use the method of elimination to solve systems of linear equations in two variables | CC.2.2.HS.D.10 | MP4 |
| Graphically interpret the number of solutions of a system of linear equations in two variables | CC.2.2.HS.D.10  A-CED.3 | MP4 |
| Use systems of linear equations in two variables to model and solve real-world and mathematical problems | CC.2.2.HS.C.6  CC.2.2.HS.D.10 | MP4 |
| \*Solve and graph a system of inequalities | CC.2.2.HS.C.6  CC.2.2.HS.D.10 | MP4 |
| \*Use systems of linear equations in two variables to model and solve real-world and mathematical problems | CC.2.2.HS.C.6  CC.2.2.HS.D.10 | MP4 |
| Use back-substitution to solve linear systems in row-echelon form | CC.2.2.HS.D.10 | MP4 |
| Use Gaussian elimination to solve systems of linear equations | CC.2.2.HS.D.10 | MP4 |
| Solve non-square systems of linear equations | CC.2.2.HS.D.10 | MP4 |
| Graphically interpret three-variable linear systems | CC.2.2.HS.D.10  A-CED.3 | MP4 |
| Use systems of linear equations to write partial fraction decompositions of rational expressions | CC.2.2.HS.C.6  CC.2.2.HS.D.10 | MP4 |
| Use systems of linear equations in three or more variables to model and solve real-world and mathematical problems | CC.2.2.HS.C.6  CC.2.2.HS.D.10 | MP4 |
| Write matrices and determine their dimensions | CC.2.2.HS.D.2  CC.2.2.HS.D.10 | MP4 |
| Perform elementary row operations on matrices | CC.2.2.HS.D.2  CC.2.2.HS.D.10 | MP4 |
| Use matrices and Gaussian elimination to solve systems of linear equations | CC.2.2.HS.D.2  CC.2.2.HS.D.10 | MP4 |
| Use matrices and Gaussian-Jordan elimination to solve systems of linear equations | CC.2.2.HS.D.2  CC.2.2.HS.D.10 | MP4 |
| Decide whether two matrices are equal | CC.2.2.HS.D.2  CC.2.2.HS.D.10 | MP4 |
| Add and subtract matrices and multiply matrices by scalars | CC.2.2.HS.D.2  CC.2.2.HS.D.10 | MP4 |
| Multiply two matrices | CC.2.2.HS.D.2  CC.2.2.HS.D.10 | MP4 |
| Use matrix operations to model and solve real-world and mathematical problems | CC.2.2.HS.D.2  CC.2.2.HS.D.10 | MP4 |
| Verify that two matrices are inverses of each other | CC.2.2.HS.D.2  CC.2.2.HS.D.10  A-REI.9 | MP4 |
| Use Gauss-Jordan elimination to find inverses of matrices | CC.2.2.HS.D.2  CC.2.2.HS.D.10  A-REI.9 | MP4 |
| Use a formula to find inverses of 2 x 2 matrices | CC.2.2.HS.D.2  CC.2.2.HS.D.10  A-REI.9 | MP4 |
| Use inverse matrices to solve systems of linear equations | CC.2.2.HS.D.2  CC.2.2.HS.D.10  A-REI.9 | MP4 |
| Find the determinants of 2 x 2 matrices | CC.2.2.HS.D.2  CC.2.2.HS.D.10  A-REI.9 | MP4 |
| Find minors and cofactors of square matrices | CC.2.2.HS.D.2  CC.2.2.HS.D.10  A-REI.9 | MP4 |
| Find the determinants of square matrices | CC.2.2.HS.D.2  CC.2.2.HS.D.10  A-REI.9 | MP4 |
| Recognize a conic as the intersection of a plane and a double-napped cone | G-GMD.4 | MP4 |
| Find the center and radius of a circle | CC.2.3.HS.A.8 | MP4 |
| Find the equation of a circle given its center and radius | CC.2.3.HS.A.10 | MP4 |
| Write equations of circles in standard form | CC.2.3.HS.A.10  G-GPE.1 | MP4 |
| Write equations of parabolas in standard form | CC.2.3.HS.A.10  G-GPE.2 | MP4 |
| Use the reflective property of parabolas to solve real-world and mathematical problems | CC.2.3.HS.A.10  CC.2.3.HS.A.14  G-GPE.2 | MP4 |
| Write equations of ellipses in standard form | CC.2.3.HS.A.10  G-GPE.3 | MP4 |
| Use properties of ellipses to model and solve real-world and mathematical problems | CC.2.3.HS.A.10  CC.2.3.HS.A.14  G-GPE.3 | MP4 |
| Find eccentricities of ellipses | CC.2.3.HS.A.10  G-GPE.3 | MP4 |
| Write equations of hyperbolas in standard form | CC.2.3.HS.A.10  G-GPE.3 | MP4 |
| Find asymptotes of and graph hyperbolas | CC.2.3.HS.A.10  G-GPE.3 | MP4 |
| Use properties of hyperbolas to solve real-world and mathematical problems | CC.2.3.HS.A.10  CC.2.3.HS.A.14  G-GPE.3 | MP4 |
| Classify conics from their general equations | CC.2.3.HS.A.10 | MP4 |
| **Marking Period 4 Review and Assessment** |  | **MP4** |
| * Review and demonstrate knowledge of Linear Systems, \*System of Inequalities, and Matrices |  | MP4 |
| * Review and demonstrate knowledge of topics in Analytic Geometry |  | MP4 |

\*Included for CHS(College in the High School) through the University of Pittsburgh, Bradford campus

**ASSESSMENTS**

**PDE Academic Standards, Assessment Anchors, and Eligible Content:** The teacher must be knowledgeable of the PDE Academic Standards, Assessment Anchors, and Eligible Content and incorporate them regularly into planned instruction.

**Formative Assessments:** The teacher will utilize a variety of assessment methods to conduct in-process evaluations of student learning.

**Effective formative assessments for this course include:  
Suggested but not limited to:**

* Pre-assessments of prior knowledge (e.g., Entrance cards or KWL chart)
* Bellringers/Problems of the Day (PODs)
* Discussions
* Exit ticket
* Teacher observations/Questioning
* Graphic organizers (e.g., Venn Diagrams, word mapping, webbing, KWL chart, etc.)
* Outlining
* Cooperative learning
* Written work
* Quizzes
* Oral response
* Self-evaluation
* Homework
* Summarizing
* Note-taking

**Summative Assessments:** The teacher will utilize a variety of assessment methods to evaluate student learning at the end of an instructional task, lesson, and/or unit.

**Effective summative assessments for this course include:  
Suggested but not limited to:**

* Performance assessment
* Chapter/unit tests
* Quizzes
* Marking period assessments
* Projects
* Student presentations