

Plano ISD Precalculus Syllabus 2020-2021

1st semester (84 days)

1st Grading Period (41 days)

Sequences and Series

- ❖ Write recursive formulas for a given arithmetic or geometric sequence.
- ❖ Identify whether a sequence converges or diverges.
- ❖ Find the sum of a finite arithmetic or geometric series.
- ❖ Find the sum of an infinite geometric series, if it exists.
- ❖ Write arithmetic and geometric series using sigma notation.
- ❖ Expand a binomial expression.
- ❖ Find a specific term of a binomial expansion.

Non-Trigonometric Functions

- ❖ Identify attributes of all non-trigonometric parent functions (and their transformations), such as domain and range, asymptotes, intercepts, extrema, end behavior, and intervals of increasing/decreasing.
- ❖ Determine odd and even functions graphically and algebraically.
- ❖ Graph and write equations of all non-trigonometric parent functions and their transformations.
- ❖ Describe the effects of the $|f(x)|$ transformation.
- ❖ Write transformed non-trigonometric parent functions and piecewise-defined functions using function notation.
- ❖ Evaluate piecewise-defined functions.
- ❖ Rewrite absolute value functions as piecewise-defined functions.
- ❖ Use long/synthetic division to aid in graphing polynomial and rational functions.
- ❖ Use the Remainder Theorem, Factor Theorem and Rational Zero (Root) Theorem to aid in graphing polynomial functions.
- ❖ Identify extrema and intervals over which a polynomial is increasing or decreasing.
- ❖ Graph and write equations of polynomial and rational functions.

End of grading period: October 9

2nd Grading Period (43 days)

Continue Non-Trigonometric Functions

- ❖ Describe end behavior and asymptotic behavior using limit notation.
- ❖ Identify an appropriate domain for a real-world situation.

Non-Trigonometric Solving

- ❖ Solve exponential, logarithmic, polynomial, rational, and power (radical) equations and determine the validity of the solution(s) in context.
- ❖ Solve real-world applications for exponential, logarithmic, and polynomial equations and determine the validity of the solution(s) in context.
- ❖ Use the properties of logarithms to evaluate or transform logarithmic expressions.
- ❖ Evaluate logarithmic and exponential expressions.
- ❖ Manipulate literal equations to isolate a different variable.
- ❖ Represent polynomial and rational functions with sign patterns.
- ❖ Solve polynomial and rational inequalities and generate solution(s) in context.
- ❖ Generate and evaluate composite functions.
- ❖ Model and solve real-world applications using composite functions.
- ❖ Decompose a composite function.
- ❖ Demonstrate that function composition is not always commutative.
- ❖ Write the inverse of a function when it exists.

End of grading period: December 18

Semester Exams: December 15 - 18

Plano ISD Precalculus Syllabus 2020-2021

2nd semester (91 days)

| 3 rd Grading Period (40 days) | 4 th Grading Period (51 days) |
|--|---|
| <p><i>Trigonometric Fundamentals</i></p> <ul style="list-style-type: none">❖ Convert angle measures between degrees and radians.❖ Identify radian and degree measures on the unit circle.❖ Identify coterminal and reference angles.❖ Calculate angular and linear velocities.❖ Relate special angles (arc measures) to their coordinate pairs.❖ Relate coordinate pairs of special angles to all six trigonometric ratios.❖ Graph and identify the attributes of trigonometric parent functions.❖ Graph and identify the attributes of transformed sine and cosine parent functions.❖ Write an equation of a sine or cosine function given specific attributes or a graph.❖ Model and solving real-world situations using sinusoidal functions.❖ Identify the principal values (restrictions on domain) for sine, cosine, and tangent as they relate to the corresponding inverse functions.❖ Evaluate and graphing inverse functions for sine, cosine, and tangent.❖ Evaluate and writing an algebraic expression for compositions containing trigonometric functions and inverse trigonometric functions.❖ Recognize trigonometric identities.❖ Simplify trigonometric expressions using trigonometric identities.❖ Evaluate trigonometric expressions using trigonometric identities.❖ Verify the equality of two trigonometric expressions using trigonometric identities. <p><i>Trigonometric Solving and Applications</i></p> <ul style="list-style-type: none">❖ Solve trigonometric equations and determining the validity of the solution(s) in context.❖ Differentiate between general solutions and solutions over specified intervals. <p>End of grading period: March 5</p> | <p><i>Continue Trigonometric Solving and Applications</i></p> <ul style="list-style-type: none">❖ Solve oblique triangles using Law of Sines in context.❖ Solve ambiguous case triangles in context.❖ Solve oblique triangles using Law of Cosines in context.❖ Calculate the area of any triangle. |

Conics, Parametric, Vectors, and Polar

- ❖ Identify conic sections from a double-napped cone and its locus definition.
- ❖ Graph and identify the attributes of ellipses and hyperbolas.
- ❖ Write the equation of an ellipse or a hyperbola given specific attributes or a graph.
- ❖ Graph parametric equations.
- ❖ Convert between rectangular and parametric forms of equations.
- ❖ Solve real-world applications involving projectile motion.
- ❖ Represent vectors geometrically and algebraically.
- ❖ Perform vector addition and scalar multiplication geometrically and algebraically in mathematical and real-world problems.
- ❖ Represent vectors using magnitude and direction, component form or as a linear combination.
- ❖ Use vectors to model situations involving magnitude and direction.
- ❖ Use dot product to determine if two vectors are orthogonal.
- ❖ Represent points using the polar coordinate system.
- ❖ Convert coordinates between polar and rectangular.
- ❖ Graph and identify attributes of polar equations.

End of grading period: May 27

Semester Exams: May 24 - 27