

# NFC Academy High School

## Pre-calculus

Start Date \_\_\_\_\_

### Unit 1: Pre-calculus: Relations and Functions

Week(s) to Work \_\_\_\_\_

1. Ordered-Pair Numbers: Relations
2. Ordered-Pair Numbers: Functions
3. Ordered-Pair Numbers: Rules of Corres.
4. Quiz 1: Relations and Functions
5. Algebra of Functions: Notation
6. Algebra of Functions: Arithmetic

7. Algebra of Functions: Composition
8. Algebra of Functions: Inverse
9. Quiz 2: Relations and Functions (2)
10. Special Project
11. Test
12. Alternate Test

### Unit 2: Pre-calculus: Functions

Week(s) to Work \_\_\_\_\_

1. Linear Functions: Graphs
2. Linear Functions: Equations
3. Quiz 1: Linear Functions
4. Second Degree Functions: Solutions
5. Relationships Between Zeros and Coefficients
6. Quadratic Inequalities
7. Quiz 2: Second-Degree Functions
8. Polynomial Functions
9. Nth-Degree Equations

10. Quiz 3: Polynomial Functions
11. Greatest Integer Function
12. Exponential Function
13. Logarithmic Function
14. Function Combinations
15. Quiz 4: Special Functions
16. Special Project
17. Test
18. Alternate Test

### Unit 3: Pre-calculus: Trigonometric Functions

Week(s) to Work \_\_\_\_\_

1. Definition of the Trigonometric Functions
2. Quiz 1: Trigonometric Functions
3. Evaluation of Functions
4. Quiz 2: Evaluation of Functions
5. Angle Location
6. Quiz 3: Angle Location
7. Reduction Formulas
8. Quiz 4: Reduction Formulas
9. Quadrantal Angles

10. Quiz 5: Quadrantal Angles
11. Special Angles
12. Quiz 6: Special Angles
13. Radian Measure
14. Quiz 7: Radian Measure
15. Special Project
16. Test
17. Alternate Test

**Unit 4: Pre-calculus: Circular Functions and Their Graphs**

1. Circular Functions
2. Quiz 1: Circular Functions
3. Circular Functions of Special Angles
4. Quiz 2: Circular Functions of Special Angles
5. Graphs of Sin and Cos
6. Quiz 3: Graphs of Sin and Cos
7. Other Graphs
8. Quiz 4: Other Graphs
9. Applications
10. Quiz 5: Applications

**Week(s) to Work** \_\_\_\_\_

11. Amplitude of Circular Functions
12. Quiz 6: Amplitude of Circular Functions
13. Period of Circular Functions
14. Quiz 7: Period of Circular Functions
15. Phase Shift of Circular Functions
16. Quiz 8: Phase shift of circular Functions
17. Special Project
18. Test
19. Alternate Test

**Unit 5: Per-calulus: Identities and Functions of Multiple Angles**

1. Reciprocal Relations
2. Quiz 1: Reciprocal Relations
3. Pythagorean Relations
4. Quiz 2: Pythagorean Relations
5. Quotient Relations
6. Quiz 3: Quotient Relations
7. Trigonometric Identities
8. Quiz 4: Trigonometric Identities
9. Cosine of the Sum of Two Angles
10. Quiz 5: Cosine of the Sum of Two Angles
11. Additional Sum and Difference Formulas

**Week(s) to Work** \_\_\_\_\_

12. Quiz 6: Additional Sum and Difference Formulas
13. Double-and Half-Angle Formulas
14. Quiz 7: Double-and Half-Angle Formulas
15. Identities
16. Quiz 8: Identities
17. Trigonometric Equations
18. Quiz 9: Trigonometric Equations
19. Special Project
20. Test
21. Alternate Test

**Unit 6: Pre-calculus: Application of Trigonometric Functions**

1. Trigonometric Functions of Any Angle
2. Quiz 1: Trigonometric Functions of Any Angle
3. More Trigonometric Functions of Any Angle
4. Quiz 2: Trigonometric Functions
5. Applied Problems
6. Law of Cosines
7. Quiz 3: Law of Cosines
8. Law of Sines
9. Quiz 4: Law of Sines

**Week(s) to Work** \_\_\_\_\_

10. More Applications
11. Quiz 4: More Applications
12. Inclined Plane Application
13. Navigation Application
14. Quiz 6: Additional Application Problems
15. Special Project
16. Test
17. Alternate Test

**Unit 7: Pre-calculus: Inverse Trigonometric Functions and Polar Coordinates**

**Week(s) to Work** \_\_\_\_\_

1. The Inverse Sine Function
2. Quiz 1: The Inverse Sine Function
3. The Inverse Cosine Function
4. Quiz 2: The Inverse Cosine Function
5. The Inverse Tangent Function
6. Quiz 3: The Inverse Tangent Function
7. Other Inverse Functions
8. Quiz 4: Other Inverse Functions
9. Graphs of Inverse Functions
10. Quiz 5: Graphs of Inverse Functions
11. Graphing Polar Coordinates
12. Quiz 6: Graphing Polar Coordinates

13. Converting Coordinates
14. Quiz 7: Converting Coordinates
15. Converting Cartesian Equations to Polar Equations
16. Quiz 8: Converting Cartesian Equations to Polar Equations
17. Converting Polar Equations to Cartesian Equations
18. Quiz 9: Converting Polar Equations to Cartesian Equations
19. Graphing Polar Equations
20. Quiz 10: Graphing Polar Equations
21. Special Project
22. Test
23. Alternate Test

**Unit 8: Pre-calculus: Quadratic Equations**

**Week(s) to Work** \_\_\_\_\_

1. The Circle
2. The Circle Continued
3. Equation from the Three Points
4. Equation from Three Points
5. The Ellipse
6. The Ellipse: Standard Form
7. The Ellipse: General Form
8. The Ellipse Applied
9. Quiz 1: Quadratic Equations
10. The Parabola
11. The Parabola Continued
12. The Parabola: Standard Form

13. The Parabola Applied
14. The Hyperbola
15. Quiz 2: Quadratic Equations
16. Translation
17. Translation of Equations
18. Rotation
19. Rotation of Equations
20. Quiz 3: Quadratic Equations
21. Special Project
22. Test
23. Alternate Test

**Unit 9: Pre-calculus: Probability**

**Week(s) to Work** \_\_\_\_\_

1. Definitions, Sample Spaces, and Probability
2. Addition of Probabilities
3. Multiplication of Probabilities
4. Quiz 1: Probability
5. Definitions
6. Permutation of N Things: Different
7. Permutation of N Things: Not All Different

8. Circular Permutations
9. Combinations
10. Quiz 2: Probability
11. Special Project
12. Test
13. Alternate Test

**Unit 10: Pre-calculus: Calculus and Review**

**Week(s) to Work** \_\_\_\_\_

1. Summation
2. Proofs by Mathematical Induction
3. Quiz 1: Calculus
4. Functional Notation
5. Difference Quotient
6. Limits
7. Quiz 2: Calculus
8. Slope of a Line
9. Slope of a Curve
10. Quiz 3: Calculus

11. Review Pre-calculus Units 1 and 2
12. Review Pre-calculus Units 3 and 4
13. Review Pre-calculus Units 5 and 6
14. Review Pre-calculus Units 7 and 8
15. Review Pre-calculus Units 9 and 10
16. Quiz 4: Calculus
17. Special Project
18. Test
19. Alternate Test

**Expected Completion Date** \_\_\_\_\_

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**Week(s) to Work**