

## Rumson-Fair Haven Regional High School Curriculum

**Course:** *Honors College Precalculus*

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**Board Approval:** September 2022

**Revision Approval:** January 2025

### **Section I: Course Description**

*Honors College Precalculus* is primarily concerned with developing the student's understanding of the concepts of Precalculus and providing experiences with its methods and applications. The course emphasizes a multi-representational approach to Precalculus, with concepts, results, and problems being expressed graphically, numerically, analytically (algebraically), and verbally. The connections among these representations are also important. Broad concepts and widely applicable methods are emphasized. The focus of the course is neither manipulation nor memorization of an extensive taxonomy of functions, curves, theorems, or problem types. Although facility with manipulation and computational competence are important outcomes, they are not the core of this course. Technology will be used regularly by students to reinforce the relationships among multiple representations of functions, to confirm written work, to implement experimentation, and to assist in interpreting results.

### **Section II: NJSLs: New Jersey Student Learning Standards/Learning Objectives**

1. [2023 New Jersey Student Learning Standards – Mathematics:](#)
  - “A New Jersey education in Mathematics builds quantitatively and analytically literate citizens prepared to meet the demands of college and career, and to engage productively in an information-driven society; ...A high-quality mathematics education fosters a population that...leverages data in decision-making and as a lens for discussing, analyzing, and responding to practical questions, persists to make sense of and model problems arising in everyday life, society, and the workplace, thinks critically and strategically to assess quantitative relationships and to solutions to complex problems, employs precise reasoning and constructs viable arguments to deduce conclusions, recognize false statements and assess peers' reasoning, interprets, evaluates and critiques the mathematics embedded in social, scientific and commercial systems, as well as the claims made in the private and public sectors, communicates precisely when conveying, representing, and justifying both qualitative and quantitative perspectives.”
2. [2023 New Jersey Student Learning Standards English Language Arts:](#)
  - A New Jersey education in English Language Arts builds readers, writers, and communicators prepared to meet the demands of college and career and to engage as productive American citizens with global responsibilities. ...Students will develop the necessary skills in reading, writing, speaking, and listening that are the foundations for creative and purposeful expression in language read rich, challenging texts that build their knowledge of the world, grow their confidence and identities as readers, and develop critical thinking skills and vocabulary necessary for long-term success[; e]ngage in regular, meaningful, writing authentic tasks, exploring valued topics, writing for impact and expression, and sharing their work with others (including authentic audiences) leverage complex texts and digital media to develop comprehension, active listening, and discussion skills ground daily writing and discussion in evidence, fostering an ability to read critically, build arguments, cite evidence, and communicate ideas to contribute meaningfully as productive citizens evaluate the reliability, credibility, and perspective of authors and speakers across all forms of media express ideas and knowledge through a variety of modalities and media, and serve as effective communicators who purposefully read, write, and speak across multiple disciplines [and ]earn to persist in reading complex texts, establishing lifelong habits to read voluntarily for pleasure, for further education, for information on public policy, and for advancement in the workplace.
3. [Standard 8.1 \(Computer Science\) and 8.2 \(Design Thinking\) of the 2020 NJSLs:](#)
  - “The ‘Intent and Spirit of the Computer Science and Design Thinking Standards’ is to focus on deep understanding of concepts that enable students to think critically and systematically about leveraging technology to solve local and global issues. Authentic learning experiences that enable students to apply content knowledge, integrate concepts across disciplines, develop computational thinking skills, acquire and incorporate varied perspectives, and communicate with diverse audiences about the use and effects of computing prepares New Jersey students for college and careers.”
4. [Standard 9.4 \(Life Literacies and Key Skills\) of the 2020 NJSLs:](#)
  - “This standard outlines key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy\* that are critical for students to develop to live and work in an interconnected global economy.”
  - **Climate Change:** The state of New Jersey has mandated instruction in, “Climate Change across all content areas, leveraging the passion students have shown for this critical issue and providing them

opportunities to develop a deep understanding of the science behind the changes and to explore the solutions our world desperately needs.”

5. **[\\*Amistad Law: N.J.S.A. 18A 52:16A-88:](#)**
  - The inclusion of lessons and resources/texts dealing with the African slave trade, slavery in America, the vestiges of slavery in this country, and the contributions of African Americans to our society will be implemented in English and Social Studies courses in accordance with state law: “Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.”
6. **[\\*Holocaust Law: N.J.S.A. 18A 35-28:](#)**
  - The inclusion of lessons and resources/texts that enable pupils to identify and analyze applicable theories concerning human nature and behavior; to understand that genocide is a consequence of prejudice and discrimination; and to understand that issues of moral dilemma and conscience have a profound impact on life will be implemented in English and Social Studies courses in accordance with state law: “Every board of education shall include instruction on the Holocaust and genocides in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.”
7. **[\\*LGBT and Disabilities Law: N.J.S.A. 18A:35-4.35:](#)**
  - A transformative approach to the inclusion of lessons and resources/texts on the contributions and issues concerning the LGBTQ+ population and people with disabilities will be implemented across all core subjects in accordance with state law: “A board of education shall include instruction on the political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum of middle school and high school students as part of the district’s implementation of the New Jersey Student Learning Standards (N.J.S.A.18A:35-4.36). A board of education shall have policies and procedures in place pertaining to the selection of instructional materials to implement the requirements of N.J.S.A. 18A:35-4.35.”
8. **[\\*Asian American and Pacific Islanders Legislation: N.J.S.A 4021/A6100:](#)**
  - The inclusion of lessons and resources/texts on the history and contributions of Asian Americans and Pacific Islanders will enable New Jersey’s schools to provide a curriculum that reflects the diversity of our state. In accordance with state law: “A board of education shall include instruction on the history and contributions of Asian Americans and Pacific Islanders in an appropriate place in the curriculum of students in grades kindergarten through as part of the school district’s implementation of the New Jersey Student Learning Standards in Social Studies.”
9. Acquisition/development/refinement of the higher-order critical thinking skills aligned with the *Revised Bloom’s Taxonomy of Cognitive Objectives*

### **Section III: Curriculum Modifications**

The *Honors College Precalculus* Curriculum is subject to case-by-case modifications to support/advance the needs of all students, including special education students, English language learners, gifted students, and those at risk of school failure. These modifications are based on Individualized Learning Programs (IEPs), recommendations made by the district’s English Language Learners (ELL) coordinator, feedback from members of the Intervention & Referral Services Team (*I&RS*) for at-risk students, and 504 Plans.

Coursework and assessments will be modified on an individual basis for students when necessary. Modifications may include but are not limited to those outlined on the [Modifications/Accommodations for Mathematics Courses](#) chart.

### **Section IV: Preparation for Standardized Testing**

Instruction in *Honors College Precalculus* is aligned with the requirements of state and national standardized assessments, including the *NJGPA*, *NJSLSA*, the *ACT*, the *PSAT*, and the *SAT*.

### **Section V: Curriculum Pacing Guide**

| Curriculum Pacing Guide                         |                 |
|---|-----------------|
| Course Title: <i>Honors College Precalculus</i> | Grade Level: 11 |

|   |             |
|---|-------------|
| <b>Unit I:</b> Functions Review                                 | Weeks 1-5   |
| <b>Unit II:</b> Polynomial Functions                            | Weeks 6-8   |
| <b>Unit III:</b> Rationals                                      | Weeks 9-10  |
| <b>Unit IV:</b> Logarithmic & Exponential Functions             | Weeks 11-13 |
| <b>Unit V:</b> Discrete Mathematics                             | Weeks 14-17 |
| <b>Unit VI:</b> Matrices  | Week 18     |
| <b>Unit VII:</b> Trigonometric Functions & their Graphs         | Weeks 19-25 |
| <b>Unit VIII:</b> Trigonometric Identities, Proofs, & Equations | Weeks 26-30 |
| <b>Unit IX:</b> Law of Sines & Cosines                          | Weeks 31-33 |
| <b>Unit X:</b> Vectors & Parametric Equations                   | Weeks 34-36 |
| <b>Unit XI:</b> Polar Equations                                 | Weeks 37-38 |
| <b>Unit XII:</b> Introduction to Limits                         | Weeks 39-40 |

### **Section VI: Technology Skills**

Students in *Honors College Precalculus* are required to complete the technology skills components of the curriculum:

- Kuta
- TI-89 Calculator
- Desmos
- Google Sheets/Slides/Docs

### **Section VII: Primary Texts and Year-Long Instructional Resources**

The following texts and instructional resources are employed in *Honors College Precalculus*:

- Demana, Waits, Foley, Kennedy, Bock. *Precalculus*, 2019
- [Math XL](#)
- [Common Sense Education](#)

### **Section VIII: Grading Formula and Assessment Modes**

Marking period grades in *Honors College Precalculus* are determined via a percentage weighting model. The specific grading categories and weightings of each will be determined before the start of each academic year and will be published in the posted/distributed course syllabi.

Assessments in *Honors College Precalculus* vary greatly in format, scope/content/skills assessed, and alternative assessments, differentiation in assessments and choice will be incorporated as appropriate. Preliminary assessments of each format will be used as benchmarks and summative assessments will be created/revised collaboratively each year and planned by members of the *Honors College Precalculus* instructional team to inform future learning and to measure student growth.

### **Section IX: Unit Templates**

The following unit templates have been established for the *Honors College Precalculus* Curriculum by the *Honors College Precalculus* Instructional Team:

| Unit I: Functions Review  |  |  |
|---|--|--|
| Unit Summary  |  |  |
| <p>In this unit, students will be reviewing function concepts from <i>Algebra II</i>. Students will solve equations and inequalities using algebraic, graphical, and geometric techniques. The equations and inequalities will involve the expression of the following types: linear, quadratic, absolute value, and radical. Students will also address functions and their domain, graphs, transformations, operations on functions, inverse functions, and rates of change. The concept of function symmetry will be introduced.</p>   |  |  |
| Standards/Core Ideas/Performance Expectations   |  |  |
| <p>The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in <i>Honors College Precalculus</i>:</p> <ul style="list-style-type: none"> <li>• 2023 New Jersey Student Learning Standards: Mathematics               <ul style="list-style-type: none"> <li>○ MP.1-8</li> <li>○ N.RN.A.1-2, N.Q.A.1, A.SSE.A.1a, 2, &amp; B.3a, A.CED.A.1-2, A.REI.A.1-2 &amp; B.3, F.IF.A.1-3, B.4-6 &amp; C.7-8</li> </ul> </li> <li>• 2023 New Jersey Student Learning Standards English Language Arts               <ul style="list-style-type: none"> <li>○ L.VL.11-12.3.A, W.AW.11-12.1.A &amp; E, W.IW.11-12.2.A, W.NW.11-12.3.A-E, SL.II.11-12.2, SL.PI.11-12.4, RI.MF.11-12.6</li> </ul> </li> <li>• 2020 New Jersey Student Learning Standards: Computer Science and Design Thinking               <ul style="list-style-type: none"> <li>○ 8.1.12.DA.1 &amp; 6</li> </ul> </li> <li>• 2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills               <ul style="list-style-type: none"> <li>○ 9.2.12.CAP.2-3, 9.4.12.CI.1, 9.4.12.CT.2, 9.4.12.DC.7</li> </ul> </li> </ul> |  |  |
| Unit Essential Questions  | Unit Enduring Understandings   |  |
| <ul style="list-style-type: none"> <li>• What information is needed to graph absolute value, radical, and quadratic functions?</li> <li>• What is the domain of a function?</li> <li>• Are there rules for performing operations with functions?</li> <li>• Can the symmetry of a function be determined algebraically?</li> </ul>  | <ul style="list-style-type: none"> <li>• Using transformations, graphs can be created by using translations to find the vertex and reflections, stretched, and compressions to find an additional point.</li> <li>• The domain of a function includes all real numbers unless there is a radical or denominator (or log) that creates restrictions.</li> <li>• Operations of functions can create additional restrictions on the domain which are caused by both the input functions and output functions.</li> <li>• <math>F(-x)</math> can indicate the symmetry of a function.</li> </ul> |  |
| Evidence of Learning  |  |  |
| <p><b>Formative &amp; Alternative Assessment:</b></p> <ul style="list-style-type: none"> <li>• Classwork</li> <li>• Homework</li> <li>• Function Matching Activity</li> <li>• Domain Around-The-Room Activity</li> </ul>  | <p><b>Benchmark &amp; Summative Assessment:</b></p> <ul style="list-style-type: none"> <li>• Function Quiz (Benchmark)</li> <li>• Symmetry Cooperative Assessment (Benchmark)</li> <li>• Unit Test (Benchmark)</li> </ul>  | <p><b>Resources Needed:</b></p> <ul style="list-style-type: none"> <li>• Demana Precalculus</li> <li>• TI-89</li> <li>• Around the Room Cards, Matching Activity</li> <li>• Kuta Software</li> <li>• Various teacher-made PowerPoints and WSs</li> </ul> |

|   |  |  |
|---|--|--|
| <ul style="list-style-type: none"> <li>Individual student check-ins with teacher</li> </ul> |  | <ul style="list-style-type: none"> <li>MathXL</li> </ul> |
|---|--|--|

| Unit II: Polynomial Functions   |  |   |
|---|--|---|
| Unit Summary  |  |   |
| <p>In this unit, students will be reviewing function concepts from <i>Algebra II</i>. Students will solve polynomial equations using algebraic techniques. Students will also sketch and analyze graphs of quadratic functions and polynomial functions, use long division and synthetic division to divide polynomials, determine the number of rational and real zeros of polynomial functions, find the zeros, and perform operations with complex numbers.</p>  |  |   |
| Standards/Core Ideas/Performance Expectations   |  |   |
| <p>The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in <i>Honors College Precalculus</i>:</p> <ul style="list-style-type: none"> <li>2023 New Jersey Student Learning Standards: Mathematics <ul style="list-style-type: none"> <li>MP.1-8</li> <li>N.CN.A.1, 3 &amp; C.7, A.SSE.A.1a, 2, &amp; B.3a, A.APR.A.1 &amp; B.2-3, A.CED.A.1-2, A.REI.A.1, B.4 &amp; D.10, F.IF.A.1-3, B.4-5, &amp; C.7-9</li> </ul> </li> <li>2023 New Jersey Student Learning Standards English Language Arts <ul style="list-style-type: none"> <li>L.VL.11-12.3.A, W.AW.11-12.1.A &amp; E, W.IW.11-12.2.A, W.NW.11-12.3.A-E, SL.II.11-12.2, SL.PI.11-12.4, RI.MF.11-12.6</li> </ul> </li> <li>2020 New Jersey Student Learning Standards: Computer Science and Design Thinking <ul style="list-style-type: none"> <li>8.1.12.DA.1 &amp; 6</li> </ul> </li> <li>2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills <ul style="list-style-type: none"> <li>9.2.12.CAP.2-3, 9.4.12.CI.1, 9.4.12.CT.2, 9.4.12.DC.7</li> </ul> </li> </ul> |  |   |
| Unit Essential Questions  | Unit Enduring Understandings   |   |
| <ul style="list-style-type: none"> <li>What types of roots can a polynomial have?</li> <li>What are the key features of a polynomial graph?</li> <li>How can the key features be found algebraically?</li> </ul>  | <ul style="list-style-type: none"> <li>Polynomials can have both complex and real roots.</li> <li>A polynomial graph has roots, x-intercepts, y-intercepts, and end behavior.</li> <li>Roots are found by factoring, synthetic division, the square root method, and/or, the quadratic formula. Real roots create x-intercepts. <math>f(0)</math> produces the y-intercept. The degree and leading coefficient of a polynomial indicate end behavior.</li> </ul> |   |
| Evidence of Learning  |  |   |
| <b>Formative &amp; Alternative Assessment:</b> <ul style="list-style-type: none"> <li>Classwork</li> <li>Homework</li> <li>Polynomial Problem Set</li> <li>Individual student check-ins with teacher</li> </ul>   | <b>Benchmark &amp; Summative Assessment:</b> <ul style="list-style-type: none"> <li>Polynomial Assessment</li> </ul>   | <b>Resources Needed:</b> <ul style="list-style-type: none"> <li>Demana Precalculus</li> <li>TI-89</li> <li>Kuta Software</li> <li>Various teacher-made PowerPoints and WSs</li> <li>MathXL</li> </ul> |

| Unit III: Rationals  |  |  |
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| Unit Summary   |  |  |
| <p>In this unit, students will be exploring rational functions. Students will address rational functions and identify key components of their graphs. Students will determine whether the function is even or odd, and identify whether there is symmetry. Students will sketch and analyze graphs of rational functions, including end behavior. Students will also solve rational equations in order to decompose rational functions.</p>  |  |  |
| Standards/Core Ideas/Performance Expectations  |  |  |
| <p>The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in <i>Honors College Precalculus</i>:</p> <ul style="list-style-type: none"> <li>2023 New Jersey Student Learning Standards: Mathematics <ul style="list-style-type: none"> <li>MP.1-8</li> <li>F.IF.B.4,5,7, &amp; 8, F.BF.B.3</li> </ul> </li> <li>2023 New Jersey Student Learning Standards English Language Arts <ul style="list-style-type: none"> <li>L.VL.11-12.3.A, W.AW.11-12.1.A &amp; E, W.IW.11-12.2.A, W.NW.11-12.3.A-E, SL.II.11-12.2, SL.PI.11-12.4, RI.MF.11-12.6</li> </ul> </li> <li>2020 New Jersey Student Learning Standards: Computer Science and Design Thinking <ul style="list-style-type: none"> <li>8.1.12.DA.1 &amp; 6</li> </ul> </li> <li>2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills</li> </ul> |  |  |

| ○ 9.2.12.CAP.2-3, 9.4.12.CI.1, 9.4.12.CT.2, 9.4.12.DC.7  |  |   |
|--|--|---|
| Unit Essential Questions   | Unit Enduring Understandings   |   |
| <ul style="list-style-type: none"> <li>• What are the key features of the graph of a rational function?</li> <li>• What strategy can be used to decompose rational functions?</li> </ul> | <ul style="list-style-type: none"> <li>• Intercepts, holes, and asymptotes are used to graph rational functions. Holes and vertical asymptotes are created because of restrictions in the function's domain. Horizontal asymptotes dictate the end behavior of the graph.</li> <li>• Solving a rational equation and a system of equations can be used to decompose rational functions.</li> </ul> |   |
| Evidence of Learning   |  |   |
| <b>Formative &amp; Alternative Assessment:</b> <ul style="list-style-type: none"> <li>• Classwork</li> <li>• Homework</li> <li>• Individual student check-ins with teacher</li> </ul>    | <b>Benchmark &amp; Summative Assessment:</b> <ul style="list-style-type: none"> <li>• Decomposition Cooperative</li> <li>• Rational Graph Quiz or Cooperative</li> <li>• Rational Function Unit Assessment</li> </ul>  | <b>Resources Needed:</b> <ul style="list-style-type: none"> <li>• Demana Precalculus</li> <li>• TI-89</li> <li>• Kuta Software</li> <li>• Various teacher-made PowerPoints and WSs</li> <li>• MathXL</li> </ul> |

| Unit IV: Logarithmic & Exponential Functions  |  |   |
|---|--|---|
| Unit Summary  |  |   |
| <p>In this unit, students will solve exponential and logarithmic equations using algebraic techniques. They will also recognize, evaluate, and graph exponential and logarithmic functions and their graphs. They will be able to identify transformations and find and graph inverse functions. Students will rewrite logarithmic functions with different bases and use properties of logs to evaluate, rewrite, expand, or condense logarithmic expressions.</p>   |  |   |
| Standards/Core Ideas/Performance Expectations   |  |   |
| <p>The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in <i>Honors College Precalculus</i>:</p> <ul style="list-style-type: none"> <li>• <i>2023 New Jersey Student Learning Standards: Mathematics</i> <ul style="list-style-type: none"> <li>○ MP.1-8</li> <li>○ N.Q.A.1, A.SSE.B.3, A.CED.A.1-4, A.REI.A.1, F.IF.B.4-6 &amp; C.7-9, F.BF.A.1 &amp; B.4, F.LE.A.1, 2, 4, &amp; B.5</li> </ul> </li> <li>• <i>2023 New Jersey Student Learning Standards English Language Arts</i> <ul style="list-style-type: none"> <li>○ L.VL.11-12.3.A, W.AW.11-12.1.A &amp; E, W.IW.11-12.2.A, W.NW.11-12.3.A-E, SL.II.11-12.2, SL.PI.11-12.4, RI.MF.11-12.6</li> </ul> </li> <li>• <i>2020 New Jersey Student Learning Standards: Computer Science and Design Thinking</i> <ul style="list-style-type: none"> <li>○ 8.1.12.DA.1 &amp; 6</li> </ul> </li> <li>• <i>2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills</i> <ul style="list-style-type: none"> <li>○ 9.1.12.CDM.2,4,6&amp;7, 9.2.12.CAP.2-3, 9.4.12.CI.1, 9.4.12.CT.2, 9.4.12.DC.7</li> </ul> </li> </ul> |  |   |
| Unit Essential Questions  | Unit Enduring Understandings   |   |
| <ul style="list-style-type: none"> <li>• What is the relationship between logarithmic and exponential functions?</li> <li>• What are the important features of a log and exponential graph?</li> </ul>  | <ul style="list-style-type: none"> <li>• Logs and Exponentials are inverses of one another and can be used to solve equations</li> <li>• Graphs of logs and exponentials have asymptotes and transformations that can be used to find guide points.</li> </ul> |   |
| Evidence of Learning  |  |   |
| <b>Formative &amp; Alternative Assessment:</b> <ul style="list-style-type: none"> <li>• Classwork</li> <li>• Homework</li> <li>• Desmos activity</li> <li>• Mortgage Enrichment</li> <li>• Individual student check-ins with teacher</li> </ul>   | <b>Benchmark &amp; Summative Assessment:</b> <ul style="list-style-type: none"> <li>• Solving Logs Quiz</li> <li>• Graphing Quiz</li> </ul>  | <b>Resources Needed:</b> <ul style="list-style-type: none"> <li>• Demana Precalculus</li> <li>• Desmos</li> <li>• TI-89</li> <li>• Kuta Software</li> <li>• Various teacher-made PowerPoints and WSs</li> <li>• MathXL</li> </ul> |

| Unit V: Discrete Mathematics  |  |  |
|---|--|--|
| Unit Summary  |  |  |
| <p>Students will learn about different number patterns in this unit, including arithmetic and geometric sequences. Students will be able to use summation formulas to find finite and infinite sums of series. Students will use the Fundamental Counting principle, find permutations and combinations, and use the Binomial Theorem to solve counting problems.</p> |  |  |
| Standards/Core Ideas/Performance Expectations   |  |  |

The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Honors College Precalculus*:

- *2023 New Jersey Student Learning Standards: Mathematics*
  - MP.1-8
  - A.SSE.B.4, A.APR.C.5, F.BF.A.1-2
- *2023 New Jersey Student Learning Standards English Language Arts*
  - L.VL.11-12.3.A, W.AW.11-12.1.A & E, W.IW.11-12.2.A, W.NW.11-12.3.A-E, SL.II.11-12.2, SL.PI.11-12.4, RI.MF.11-12.6
- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.1 & 6
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.2-3, 9.4.12.CI.1, 9.4.12.CT.2, 9.4.12.DC.7

| Unit Essential Questions   |   | Unit Enduring Understandings   |  |
|--|---|--|--|
| <ul style="list-style-type: none"> <li>● What constitutes an arithmetic sequence?</li> <li>● What constitutes a geometric sequence?</li> <li>● How can a series have an infinite sum?</li> <li>● How can we count finite sums?</li> </ul>  |   | <ul style="list-style-type: none"> <li>● Arithmetic sequences have common differences.</li> <li>● Geometric sequences have common ratios.</li> <li>● Series can converge and diverge.</li> <li>● Permutations, Combinations, the Fundamental Counting Principle, and Pascal's Triangle can be used to find finite sums.</li> </ul> |  |
| Evidence of Learning   |   |  |  |
| <b>Formative &amp; Alternative Assessment:</b> <ul style="list-style-type: none"> <li>● Classwork</li> <li>● Homework</li> <li>● Entrance/Exit Slips</li> <li>● Jeopardy Summation Activity</li> <li>● FCP Around the Room</li> <li>● Individual student check-ins with teacher</li> </ul> | <b>Benchmark &amp; Summative Assessment:</b> <ul style="list-style-type: none"> <li>● Series Cooperative</li> <li>● Arithmetic and Geometric Quiz</li> <li>● Unit Assessment</li> </ul> | <b>Resources Needed:</b> <ul style="list-style-type: none"> <li>● Demana Precalculus</li> <li>● TI-89</li> <li>● Kuta Software</li> <li>● Various teacher-made PowerPoints and WSs</li> <li>● MathXL</li> </ul>  |  |

### Unit VI: Matrices

#### Unit Summary

In this unit, students will use matrices to represent data and perform matrix operations using a graphing utility. Students will be able to perform addition, subtraction, and multiplication of matrices along with solving systems of equations using matrices.

#### Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Honors College Precalculus*:

- *2023 New Jersey Student Learning Standards: Mathematics*
  - MP.1-8
  - N.VM.C.6-8, A.REI.C.5
- *2023 New Jersey Student Learning Standards English Language Arts*
  - L.VL.11-12.3.A, W.AW.11-12.1.A & E, W.IW.11-12.2.A, W.NW.11-12.3.A-E, SL.II.11-12.2, SL.PI.11-12.4, RI.MF.11-12.6
- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.1 & 6
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.2-3, 9.4.12.CI.1, 9.4.12.CT.2, 9.4.12.DC.7

| Unit Essential Questions  |   | Unit Enduring Understandings  |  |
|---|---|---|--|
| <ul style="list-style-type: none"> <li>● How is a matrix represented?</li> <li>● How are matrix operations performed?</li> <li>● What mathematical concept can matrices be used for?</li> </ul> |   | <ul style="list-style-type: none"> <li>● A matrix is an array of numbers.</li> <li>● Operations of addition, subtraction, and multiplication can be performed if the correct dimension conditions exist; all operations can be done using the TI-89 if the dimensions are compatible.</li> <li>● Matrices can solve a multivariable system of equations.</li> </ul> |  |
| Evidence of Learning  |   |   |  |
| <b>Formative &amp; Alternative Assessment:</b> <ul style="list-style-type: none"> <li>● Classwork</li> </ul>  | <b>Benchmark &amp; Summative Assessment:</b> <ul style="list-style-type: none"> <li>● Matrix Mini Quiz</li> </ul> | <b>Resources Needed:</b> <ul style="list-style-type: none"> <li>● Demana Precalculus</li> <li>● TI-89</li> </ul>  |  |

|  |  |   |
|--|--|---|
| <ul style="list-style-type: none"> <li>• Homework</li> <li>• Exit Slip</li> <li>• Individual student check-ins with teacher</li> </ul> |  | <ul style="list-style-type: none"> <li>• Kuta Software</li> <li>• Various teacher-made PowerPoints and WSs</li> <li>• MathXL</li> </ul> |
|--|--|---|

### Unit VII: Trigonometric Functions & Their Graphs

#### Unit Summary

In this unit, students will describe an angle and convert between degree and radian measure, identify a unit circle and describe its relationship to real numbers, evaluate trigonometric functions of any angle, evaluate inverse trigonometric functions, and evaluate the composition of trigonometric functions. Students will also study graphs of the six trigonometric functions. They will apply prior knowledge of reflections, stretches, compressions, shifts, and symmetry to the new trigonometric functions. Some new vocabulary terms associated with applying these concepts are periodic graphs, amplitudes, and phase shifts. Knowledge of graphing and inverses will be extended to Simple Harmonic Motion.

#### Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Honors College Precalculus*:

- *2023 New Jersey Student Learning Standards: Mathematics*
  - MP.1-8
  - N.Q.A.1, F.IF.B.4-5 & C.9, F.BF.A.1 & B.3, F.TF.A.1-4 & B.5-7
- *2023 New Jersey Student Learning Standards English Language Arts*
  - L.VL.11-12.3.A, W.AW.11-12.1.A & E, W.IW.11-12.2.A, W.NW.11-12.3.A-E, SL.II.11-12.2, SL.PI.11-12.4, RI.MF.11-12.6
- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.1 & 6
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.2-3, 9.4.12.CI.1, 9.4.12.CT.2, 9.4.12.DC.7

#### Unit Essential Questions

- What is the foundation of trigonometry?
- What is the relationship between degrees and radians?
- How do we locate angles given in radians?
- How are trig functions evaluated?
- How are trig. graphs used in mathematical modeling?
- How can transformations be used to graph trig functions?

#### Unit Enduring Understandings

- A right triangle can be used to create all trig ratios and additional concepts.
- Degrees measure the angle whereas radians measure the corresponding arc of the unit circle.
- Radians are based on a circle with a circumference of  $2\pi$  and the x and y axis can help create the unit circle to place angles in the appropriate location.
- Using a right triangle (especially the special right triangles) and the unit circle, trig functions can be evaluated by hand.
- Sine and cosine functions can be used to model many real-life situations, including electric currents, musical tones, radio waves, tides, and weather patterns.
- Transformations (learned in Unit I) are used to graph different trigonometric functions.

#### Evidence of Learning

##### Formative & Alternative Assessment:

- Classwork
- Homework
- Math-O
- Evaluating Race
- Graphing with Desmos
- Desmos Polygraph
- Graphing Presentations
- Simple Harmonic Motion Enrichment
- Individual student check-ins with teacher

##### Benchmark & Summative Assessment:

- Evaluating Quiz
- Graphing Quiz
- Graphing Cooperative
- Inverse Quiz

##### Resources Needed:

- Demana Precalculus
- Desmos
- TI-89
- Kuta Software
- Various teacher-made PowerPoints and WSs
- MathXL

### Unit VIII: Trigonometric Identities, Proofs, & Equations

#### Unit Summary

In this unit, students will use fundamental trigonometric identities to evaluate trigonometric functions and simplify trigonometric expressions, verify trigonometric identities, use standard algebraic techniques, and use sum and difference formulas and multiple angle formulas. All of these identities are used to rewrite and evaluate trigonometric functions. Students will solve trigonometric equations using algebraic methods. Most algebraic methods will require factoring and the use of inverse trigonometric functions and identities.

#### Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Honors College Precalculus*:

- *2023 New Jersey Student Learning Standards: Mathematics*
  - MP.1-8
  - A.REI.A.1, F.TF.B.7 & C.8-9
- *2023 New Jersey Student Learning Standards English Language Arts*
  - L.VL.11-12.3.A, W.AW.11-12.1.A & E, W.IW.11-12.2.A, W.NW.11-12.3.A-E, SL.II.11-12.2, SL.PI.11-12.4, RI.MF.11-12.6
- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.1 & 6
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.2-3, 9.4.12.CI.1, 9.4.12.CT.2, 9.4.12.DC.7

#### Unit Essential Questions

- What skills will students use to simplify trig expressions?
- Where do the identities come from?
- How are the trig inverses functions?
- How are trig equations solved?

#### Unit Enduring Understandings

- Foundational algebra skills (factoring, combining like terms, canceling, common denominators, conjugates) can be used to simplify trig expressions using the trig identities.
- A right triangle and the Pythagorean Theorem can be used to prove all identities.
- The input and output of the trig inverses are restricted.
- Trigonometric equations use foundational algebra concepts and identities to be solved.

#### Evidence of Learning

##### Formative & Alternative Assessment:

- Classwork
- Homework
- Identity Escape Room
- Individual student check-ins with teacher

##### Benchmark & Summative Assessment:

- Identity Cooperative
- Solving Quiz
- Sum/Difference/Double Angle Assessment
- Unit Assessment

##### Resources Needed:

- Demana Precalculus
- TI-89
- Kuta Software
- Various teacher-made PowerPoints and Ws
- MathXL

### Unit IX: Law of Sines & Cosines

#### Unit Summary

In this unit, students will use the Law of Sines and the Law of Cosines to solve oblique triangles and find areas of oblique triangles. Students will also apply the Law of Sines and the Law of Cosines to real-world problems and situations.

#### Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Honors College Precalculus*:

- *2023 New Jersey Student Learning Standards: Mathematics*
  - MP.1-8
  - G.CO.C.10, G.SRT.D.9-11, G.MG.A.3
- *2023 New Jersey Student Learning Standards English Language Arts*
  - L.VL.11-12.3.A, W.AW.11-12.1.A & E, W.IW.11-12.2.A, W.NW.11-12.3.A-E, SL.II.11-12.2, SL.PI.11-12.4, RI.MF.11-12.6
- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.1 & 6
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.2-3, 9.4.12.CI.1, 9.4.12.CT.2, 9.4.12.DC.7

#### Unit Essential Questions

#### Unit Enduring Understandings

|   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• What is the purpose of the Law of Sines and the Law of Cosines?</li> <li>• Are there other “formulas” for the area of a triangle?</li> </ul>   | <ul style="list-style-type: none"> <li>• The Law of Sines and Cosines is derived from right triangles but can be extended to oblique triangles to solve for missing sides and angles.</li> <li>• Using <math>\text{Area} = 1/2bh</math>, a trigonometric form of this formula can be used in a triangle with an unknown height. Heron’s formula can be used when 3 sides of the triangle are known.</li> </ul> |
| <b>Evidence of Learning</b>   |  |
| <b>Formative &amp; Alternative Assessment:</b> <ul style="list-style-type: none"> <li>• Classwork</li> <li>• Homework</li> <li>• Number of Solution Card Sort</li> <li>• Application Presentations</li> <li>• Individual student check-ins with teacher</li> </ul>                                | <b>Benchmark &amp; Summative Assessment:</b> <ul style="list-style-type: none"> <li>• Law of Sines/Cosines Quiz</li> <li>• Application Cooperative</li> <li>• Unit Project: Area of a Plot of Land</li> </ul>  |
| <b>Resources Needed:</b> <ul style="list-style-type: none"> <li>• Demana Precalculus</li> <li>• TI-89</li> <li>• Kuta Software</li> <li>• Various teacher-made PowerPoints and WSs</li> <li>• MathXL</li> <li>• Common Sense Lesson: <a href="#">Is the Internet Making You Meaner</a></li> </ul> |  |

|  |   |
|--|---|
| <b>Unit X: Vectors &amp; Parametric Equations</b>  |   |
| <b>Unit Summary</b>  |   |
| <p>In this unit, students will model and solve real-life problems involving vectors and build an understanding of horizontal and vertical components to relate them to parametric equations. Students will review graphs of all functions and graphs of conics. Students will convert between parametric and rectangular equations and graph parametric equations by eliminating the parameter and including restrictions.</p>   |   |
| <b>Standards/Core Ideas/Performance Expectations</b>   |   |
| <p>The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in <i>Honors College Precalculus</i>:</p> <ul style="list-style-type: none"> <li>• <i>2023 New Jersey Student Learning Standards: Mathematics</i> <ul style="list-style-type: none"> <li>◦ MP.1-8</li> <li>◦ N.VM.A.1-3 &amp; B.4, G.CO.C.11, G.SRT.D.11, G.GPE.A.1-3</li> </ul> </li> <li>• <i>2023 New Jersey Student Learning Standards English Language Arts</i> <ul style="list-style-type: none"> <li>◦ L.VL.11-12.3.A, W.AW.11-12.1.A &amp; E, W.IW.11-12.2.A, W.NW.11-12.3.A-E, SL.II.11-12.2, SL.PI.11-12.4, RI.MF.11-12.6</li> </ul> </li> <li>• <i>2020 New Jersey Student Learning Standards: Computer Science and Design Thinking</i> <ul style="list-style-type: none"> <li>◦ 8.1.12.DA.1 &amp; 6</li> </ul> </li> <li>• <i>2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills</i> <ul style="list-style-type: none"> <li>◦ 9.2.12.CAP.2-3, 9.4.12.CI.1, 9.4.12.CT.2, 9.4.12.DC.7</li> </ul> </li> </ul> |   |
| <b>Unit Essential Questions</b>  | <b>Unit Enduring Understandings</b>   |
| <ul style="list-style-type: none"> <li>• What are vectors and how do they relate to trigonometry?</li> <li>• How are parametrics used to demonstrate a parabolic path?</li> <li>• How do you graph the curve of a parametric equation?</li> </ul>  | <ul style="list-style-type: none"> <li>• Vectors identify the path of an object with a horizontal and vertical component; vectors describe magnitude and direction. The vector’s components create a right triangle and can therefore rely on trigonometry to find missing parts.</li> <li>• Parametrics represent a separate horizontal and vertical component of parabolic paths.</li> <li>• The parameter of a parametric equation can be eliminated in order to form a rectangular equation that can be graphed, however, there are restrictions that the original parametric can create in the final graph.</li> </ul> |
| <b>Evidence of Learning</b>  |   |
| <b>Formative &amp; Alternative Assessment:</b> <ul style="list-style-type: none"> <li>• Classwork</li> <li>• Homework</li> <li>• Vector Presentations</li> <li>• Conic Section Problem Set</li> <li>• Graphing Presentations</li> <li>• Individual student check-ins with teacher</li> </ul>   | <b>Benchmark &amp; Summative Assessment:</b> <ul style="list-style-type: none"> <li>• Mini Vector Quiz</li> <li>• Graphing Quiz</li> <li>• Parametric Quiz</li> </ul>   |
| <b>Resources Needed:</b> <ul style="list-style-type: none"> <li>• Demana Precalculus</li> <li>• TI-89</li> <li>• Kuta Software</li> <li>• Various teacher-made PowerPoints and WSs</li> <li>• MathXL</li> </ul>  |   |

**Unit XI: Polar Equations**

| Unit Summary   |   |  |
|--|---|--|
| In this unit, students will convert equations and coordinates from rectangular to polar form, or vice versa. Students will graph polar curves using polar coordinates and identify polar graphs, including a rose, cardioid, limacon, and lemniscate.  |   |  |
| Standards/Core Ideas/Performance Expectations  |   |  |
| The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in <i>Honors College Precalculus</i> :  |   |  |
| <ul style="list-style-type: none"> <li>● 2023 New Jersey Student Learning Standards: Mathematics               <ul style="list-style-type: none"> <li>○ MP.1-8</li> <li>○ N.CN.B.4</li> </ul> </li> <li>● 2023 New Jersey Student Learning Standards English Language Arts               <ul style="list-style-type: none"> <li>○ L.VL.11-12.3.A, W.AW.11-12.1.A &amp; E, W.IW.11-12.2.A, W.NW.11-12.3.A-E, SL.II.11-12.2, SL.PI.11-12.4, RI.MF.11-12.6</li> </ul> </li> <li>● 2020 New Jersey Student Learning Standards: Computer Science and Design Thinking               <ul style="list-style-type: none"> <li>○ 8.1.12.DA.1 &amp; 6</li> </ul> </li> <li>● 2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills               <ul style="list-style-type: none"> <li>○ 9.2.12.CAP.2-3, 9.4.12.CI.1, 9.4.12.CT.2, 9.4.12.DC.7</li> </ul> </li> </ul> |   |  |
| Unit Essential Questions   | Unit Enduring Understandings  |  |
| <ul style="list-style-type: none"> <li>● How are polar coordinates related to rectangular coordinates?</li> <li>● What are the four main polar graphs and how are they graphed?</li> </ul>   | <ul style="list-style-type: none"> <li>● Polar coordinates are a system of graphing that relates to rectangular coordinates and can be plotted using a radian measure and a radius</li> <li>● The rose, cardioid, lemniscate, and limacon are common polar graphs and follow a general pattern (mins, maxs, neutrals, radii) when graphed.</li> </ul> |  |
| Evidence of Learning   |   |  |
| <b>Formative &amp; Alternative Assessment:</b> <ul style="list-style-type: none"> <li>● Classwork</li> <li>● Homework</li> <li>● Conversion Enrichment</li> <li>● Individual student check-ins with teacher</li> </ul>   | <b>Benchmark &amp; Summative Assessment:</b> <ul style="list-style-type: none"> <li>● Polar Assessment</li> <li>● Polar Cooperative</li> </ul>  | <b>Resources Needed:</b> <ul style="list-style-type: none"> <li>● Demana Precalculus</li> <li>● TI-89</li> <li>● Kuta Software</li> <li>● Desmos (Graphing Demonstrations)</li> <li>● Various teacher-made PowerPoints and Ws</li> <li>● MathXL</li> </ul> |

| Unit XII: Introduction to Limits   |  |  |
|--|--|--|
| Unit Summary   |  |  |
| In this unit, students will be introduced to limits and their properties. Students will evaluate limits graphically, algebraically, and using tables. Students will work with limits involving infinity and be able to make generalizations using limits that will incorporate various concepts from previous units.   |  |  |
| Standards/Core Ideas/Performance Expectations  |  |  |
| The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in <i>Honors College Precalculus</i> :  |  |  |
| <ul style="list-style-type: none"> <li>● 2023 New Jersey Student Learning Standards: Mathematics               <ul style="list-style-type: none"> <li>○ MP.1-8</li> <li>○ F.IF.B.4, 6, &amp; C.9</li> </ul> </li> <li>● 2023 New Jersey Student Learning Standards English Language Arts               <ul style="list-style-type: none"> <li>○ L.VL.11-12.3.A, W.AW.11-12.1.A &amp; E, W.IW.11-12.2.A, W.NW.11-12.3.A-E, SL.II.11-12.2, SL.PI.11-12.4, RI.MF.11-12.6</li> </ul> </li> <li>● 2020 New Jersey Student Learning Standards: Computer Science and Design Thinking               <ul style="list-style-type: none"> <li>○ 8.1.12.DA.1 &amp; 6</li> </ul> </li> <li>● 2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills               <ul style="list-style-type: none"> <li>○ 9.2.12.CAP.2-3, 9.4.12.CI.1, 9.4.12.CT.2, 9.4.12.DC.7</li> </ul> </li> </ul> |  |  |
| Unit Essential Questions   | Unit Enduring Understandings   |  |
| <ul style="list-style-type: none"> <li>● What is a limit?</li> <li>● How can limits be used to describe functions' behavior graphically or analytically?</li> </ul>  | <ul style="list-style-type: none"> <li>● A limit describes the behavior of a function as the input approaches a particular value</li> <li>● Limits can be calculated at any point on a graph or within a function to describe values that a graph/function approaches and can be linked to end behavior. Limits will be used as a foundation in calculus when continuity and differentiation are discussed.</li> </ul> |  |
| Evidence of Learning   |  |  |

|   |   |   |
|---|---|---|
| <b>Formative &amp; Alternative Assessment:</b> <ul style="list-style-type: none"> <li>● Classwork</li> <li>● Homework</li> <li>● Exit Slip</li> <li>● Limits Algebraically Presentation</li> <li>● Individual student check-ins with teacher</li> </ul> | <b>Benchmark &amp; Summative Assessment:</b> <ul style="list-style-type: none"> <li>● Graphing Limits Cooperative</li> <li>● Limits Quiz</li> </ul> | <b>Resources Needed:</b> <ul style="list-style-type: none"> <li>● Demana Precalculus</li> <li>● TI-89</li> <li>● Kuta Software</li> <li>● Various teacher-made PowerPoints and WSs</li> <li>● MathXL</li> </ul> |
|---|---|---|

**Section X: Unit Reflection**

The *Honors College Precalculus* instructional team must confer upon the completion of each instructional unit in the *Honors College Precalculus* curriculum and rate the degrees to which the instructional units meet performance criteria established by the New Jersey Department of Education using the Unit Reflection Form. Completed unit reflection forms must be submitted to the Department Supervisor for approval upon completion of curriculum implementation with a complementing list of suggested modifications to the *Honors College Precalculus* Curriculum.

| Unit Reflection Form: <i>Honors College Precalculus</i>   |          |            |        |
|---|----------|------------|--------|
| Lesson Activities:  | Strongly | Moderately | Weakly |
| Foster student use of technology as a tool to develop critical thinking, creativity, and innovation skills;   |          |            |        |
| Are challenging and require higher-order thinking and problem-solving skills;   |          |            |        |
| Allow for student choice;   |          |            |        |
| Provide scaffolding for acquiring targeted knowledge/skills;  |          |            |        |
| Integrate modern, global perspectives, especially those regarding diversity, genocide, global issues, and historical ones regarding racial relations; |          |            |        |
| Integrate 21 <sup>st</sup> century skills;  |          |            |        |
| Provide opportunities for interdisciplinary connection and transfer of knowledge and skills;  |          |            |        |
| Are varied to address different student learning styles and preferences;  |          |            |        |
| Are differentiated based on student needs;  |          |            |        |
| Are student-centered with the teacher acting as a facilitator and co-learner during the teaching and learning process;                                |          |            |        |
| Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives;                                 |          |            |        |
| Provide opportunities for student reflection and self-assessment;   |          |            |        |
| Provide data to inform and adjust instruction to better meet the varying needs of learners.   |          |            |        |

**Appendix**  
*Writing Instruction and the RFH Community*

Writing instruction should happen across the RFH Community. Writing across the curriculum is a philosophy that advances the belief that writing is a method of learning. Since all departments are committed to helping students learn, writing must be used as a methodology to advance student learning.

Each academic discipline has its own unique conventions, formats and structures. It is the responsibility of each department to agree upon domain-specific writing praxes, model them for students, and require them to utilize them on a consistent basis. Students must understand that acceptable writing in one domain may not be acceptable writing in another area. The development of domain-specific writing skills supports the overall development of the student writer because all writing is grounded in the writing situation: audience, context, purpose, subject, and writer. Representatives from the academic disciplines must share their domain-specific writing praxes with each other, identify intersections, and determine how to address perceived gaps that limit student learning.

Students must experience writing situations that help them learn how to think creatively and critically and communicate effectively in the academic disciplines. Writing instruction, regardless of the academic discipline, must always reinforce student understanding of the writing situation. When students experience writing situations, they must study examples of domain-specific writing in order to understand how writers communicate in discipline-related contexts. This does not mean information embedded in textbooks. Domain-specific writing is writing that is used to inform and influence readers as it draws them into an established circle of discourse. Students must use these non-fiction texts to develop the close reading skills that will shape their own writing. Focused engagement with domain-specific writing should not be limited to basic reading comprehension and topical understanding. It must also include the analysis of the writing situation that is represented in the text: audience, context, purpose, subject, and writer. The close reading of well-written texts—regardless of the domain—will show students the importance of writing mechanics, diction, and syntax. The development of close reading skills will also help the students grow in terms of their ability to construct and advance independent and original claims that are well-supported by evidence. Domain-specific writing is grounded in positioning of claims and the effective use of evidence.

The final written product is important; nevertheless, the learning that results in this production must not be devalued. The writing process is not limited to the basic steps of planning, drafting, revising, and editing/proofreading. It is a complex sequence of critical and creative thinking and writing that leads to the production of a text that provides evidence of learning and understanding. Students must ultimately develop the ability to self-assess the effectiveness of their writing as a representation of the writing situation. Without the use of models that evidence learning and understanding, students will not develop the ability to self-assess their own work—the true outcome of the writing process.

### **What types of writing situations should RFH students engage in?**

RFH students should engage in writing situations across the curriculum that require them to:

- write to improve mechanical proficiency, diction usage, and syntactical sophistication
- write to narrate, describe, and reflect
- write to summarize and report
- write to classify and define
- write to explain how process leads to an outcome
- write to compare, contrast and evaluate
- write to speculate on cause and effect
- write to propose solutions and solve problems
- write to analyze

These writing situations should be positioned in a coordinated, developmental sequence that extends across the academic disciplines.

Upon Completion of Grade 12, RFH students must be ready to transition to the following writing situations:

- write to analyze
- write to persuade (argument)

The core foci of first-year college writing courses are analysis and argument. These courses orient the students to the demands and expectations of writing for the academic culture of college. At colleges/universities with carefully coordinated writing programs, students must demonstrate proficiency in analysis and argument before they transition to upper level courses that require them to engage in the following writing situation:

- write to investigate (research)