SECONDARY MATHEMATICS II—HONORS STANDARDS

**Strand: NUMBER AND QUANTITY—Complex Number System (N.CN)**

Perform arithmetic operations with complex numbers (Standard N.CN.3). Represent complex numbers and their operations on the complex plane (Standards N.CN.4–5).

- **Standard N.CN.3**  Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.
- **Standard N.CN.4**  Represent complex numbers on the complex plane in rectangular form, and explain why the rectangular form of a given complex number represents the same number.
- **Standard N.CN.5**  Represent addition, subtraction, and multiplication geometrically on the complex plane; use properties of this representation for computation. *For example, (-1 + √3 i)3 = 8 because (-1 + √3 i) has modulus 2 and argument 120°.*

**Strand: ALGEBRA—Reasoning With Equations and Inequalities (A.REI)**

Solve systems of equations (Standards A.REI.8–9).

- **Standard A.REI.8**  Represent a system of linear equations as a single-matrix equation in a vector variable.
- **Standard A.REI.9**  Find the inverse of a matrix if it exists, and use it to solve systems of linear equations (using technology for matrices of dimension 3 x 3 or greater).

**Strand: FUNCTIONS—Interpreting Functions (F.IF)**

Analyze functions using different representations (Standards F.IF.10–11).

- **Standard F.IF.10**  Use sigma notation to represent the sum of a finite arithmetic or geometric series.
- **Standard F.IF.11**  Represent series algebraically, graphically, and numerically.

**Strand: GEOMETRY—Expressing Geometric Properties With Equations (G-GPE)**

Translate between the geometric description and the equation for a conic section (Standards G.GPE.2–3).

- **Standard G.GPE.2**  Derive the equation of a parabola given a focus and directrix.
- **Standard G.GPE.3**  Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.

Understand independence and conditional probability and use them to interpret data (Standards S.CP.2–3). Use the rules of probability to compute probabilities of compound events in a uniform probability model (Standards S.CP.7–8).

- **Standard S.CP.2** Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.

- **Standard S.CP.3** Understand the conditional probability of A given B as \( \frac{P(A \text{ and } B)}{P(B)} \), and interpret independence of A and B as saying that the conditional probability of B given A is the same as the probability of B.

- **Standard S.CP.7** Apply the Addition Rule, \( P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B) \), and interpret the answer in terms of the model.

- **Standard S.CP.8** Apply the general Multiplication Rule in a uniform probability model, \( P(A \text{ and } B) = P(A)P(B|A) = P(B)P(A|B) \), and interpret the answer in terms of the model.