

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, $(-1 + \sqrt{3}i)^3 = 8$ because $(-1 + \sqrt{3}i)$ 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 3×3 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.

Strand: STATISTICS AND PROBABILITY—Conditional Probability and the Rules of Probability (S.CP)

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 $P(A \text{ and } B)/P(B)$, 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.