

## ALGEBRA 2 (MATH 3)—THE BIG PICTURE

- Covers the expected content of any algebra 2 class.
- Review and extends 80% of algebra 1 topics and 40% of geometry topics. For example, two dimension systems from algebra 1 are extended to three-dimensional systems and are solved multiple ways. Right triangle trigonometry from geometry is extended to the laws of sines and cosines.
- There is a regular use of technology and a lab approach similar to what is used in science classes.
- Instead of spending the first three to four chapters reviewing algebra 1 as many texts do, the course starts with new material quickly and reviews algebra 1 material in context. For example, chapter one starts with investigating functions using the graphing calculator and chapter two uses arithmetic sequences to review linear equations and systems.
- Eight of the 13 chapters cover the fundamentals of algebra 2:
  - Linear, quadratic, polynomial, exponential, absolute value, simple rational, logarithmic, and square root equations are covered in a functions approach.
  - Conics
  - Sequences and series
  - Systems with and without matrices
  - Complex numbers
  - Whenever possible, topics are investigated in context of real problems. For example, polynomials are concluded with a typical calculus problem of maximum volume.
  - Technology is used to speed investigations and understanding but students are also expected to be able to do most problems by hand.
- The rest of the book gives choices based on expectations of the next course:
  - Two trigonometry chapters—First, a unit circle approach to sine, cosine, tangent functions, and their inverses with applications. Second, right triangle trigonometry is extended to the laws of sines and cosines.
  - Two discrete mathematics chapters—First, a chapter on probability using concrete models to solve probability, conditional probability and expected value problems. Second, a chapter on counting yielding problems involving permutations, combinations, and the binomial theorem.
  - One statistics chapter that covers measures of central tendency and ways of displaying data.
- Each chapter reviews the concepts developed previously and most chapters contain a culminating big problem to tie together and/or possibly extend the algebra concepts