Math 143
Exam 4 Review Sheet

Section 7.6 The Inverse Trigonometric Functions

• Know the 7 key properties of inverse functions (see text page 550)
• Know the domain and range of $y = sin^{-1}x$, $y = cos^{-1}x$, and $y = tan^{-1}x$
• Be able to find exact values of expressions involving inverse trig functions, both using memorized key values and building triangles and applying identities when necessary.
• Be able to put epressions involving inverse trig functions into algebraic form by solving the related right triangle.
• Be able to find the domain and range and sketch the graphs of equations involving the inverse trig functions.
• Be able to solve equations that are of quadratic form using inverse trig functions.

Section 8.1 The Law of Sines

• Memorize the Law of Sines
• Be able to solve non-right triangles using the Law of Sines, including cases where there are two possible triangles.
• Be able to use the Law of Sines to solve application problems.

Section 8.2 The Law of Cosines

• Memorize all 3 forms of the Law of Cosines
• Be able to solve non-right triangles using the Law of Cosines.
• Be able to use the Law of Cosines to solve application problems.
• Memorize and be able to apply the formulas for finding the area of triangles.

Section 2.4 Complex Numbers

• Know the definiton of i, and the standard form for a complex number
• Be able to add, subtract, multiply complex numbers
• Be able to simplify powers of i
• Be able to solve linear and quadratic equations involving complex numbers

Section 8.5

• Know how to find the absolute value (modulus) of a comlex number.
• Understand the geometric representation of a complex number $z = a + bi$
• Understand the polar form of a complex number $z = rcis(\theta)$
• Be able to convert complex numbers from rectangular to polar (trigonometric form) and back
• Be able to multiply and divide complex numbers in polar form, and understand the geometric interpretation of these operations

Section 8.6 De Moivre's Theorem and n^{th} Roots of Complex Numbers

Key Topics:
• Memorize De Moivre's Theorem and the Theorem on n^{th} roots
• Be able to apply De Moivre's Theorem to compute powers of complex numbers in both polar and rectangular form
• Be able to apply the Theorem on n^{th} roots to find n^{th} roots of complex numbers, including n^{th} roots of unity
• Be able to represent the n^{th} roots of a complex number graphically
• Be able to solve equations by finding the n^{th} roots of a complex number

Practice Problems: Chapter 7 Review p. 567 # 61, 63, 66, 67, 69, 70, 71, 72 ; Chapter 2 Review pp. 129-130 # 14, 15, 51, 52, 53, 55, 56 ; Chapter 8 Review pp. 629-630 # 6, 8, 9, 10, 23, 24, 28, 29, 30, 31, 35, 37, 39, 44, 47
Warning: The Chapter Review Problems are missing a couple of important concepts that will be tested on the exam. Make sure to read the review points above and to look over the *entire* homework assignment from section 7.6