Calculus I Placement Test Syllabus

Placement into Ma 135 requires a satisfactory understanding of the following topics:

Inverses
- Find inverse function of given function
- Graphs of inverse functions
- Composition of Inverse Functions
- Logarithmic properties
- Exponential and Logarithmic equations

Trigonometry
- Right triangle trigonometry
- Arc Length Formula
- Linear speed and Angular speed relationship
- Solve a triangle. Given parts of a triangle, find the other parts. There may be more than one answer.
- Angle of elevation /depression
- Trigonometric functions of any angle
- Graphs of trigonometric functions
- Relation of trigonometric values to the unit circle

Trig Computations
- Given a trig value $f(\alpha) = z$ and either a quadrant or the sign of another trig value, find another trig value $g(\alpha)$
- Compute a (known) trig value. Need to know multiples of $\pi/6$ and $\pi/4$ □ Solve a trigonometric equation
- Given a point on the terminal side of an angle, find the sine and cosine of that angle
- Logarithms and Exponentials: Convert an equation involving logs and exponentials
- Convert between degrees and radians

Identities
- Verify trig identities
- Trig Functions and Their Inverses: $\sin(\sin^{-1} x) = ?$; $\sin^{-1}(\sin x) = ?$; $\log_a(a^x) = ?$
- Pythagorean Identities
- Double Angle and Function Squared: $\sin(2x)$, $\cos(2x)$, $\tan(2x)$
- Law of Sines and Law of Cosines

Vectors
- Vector basics
- How far apart are two items?

Complex Numbers
- Raise a complex number to a power or find its roots
- Convert between rectangular and polar form of a complex number

Sequences and Series
- Find the sum of a series
- Convert a series into its sigma form
- Find a recursive definition for a sequence
- Find the nth term definition for a sequence

Chapters 4-7, 11 of the following text address the topics covered by this syllabus:

College Algebra and Trigonometry, Aufmann, Barker, Nation, 7th edition
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