

MA 180 Final Exam Study Guide

The final exam is Wednesday, December 14th, from 10:15 am to 12:15 pm. Students may use one (1) double-sided 3x5 handwritten index card (or two single-sided 3x5's) for the final exam. You will be given the Sum/Difference, Double-Angle, and Half-Angle formulas.

Students should be able to:

1. Given a function:
 - (a) State the domain using appropriate math notation
 - (b) Identify the interval(s) where function is increasing/decreasing.
 - (c) Approximate local [relative] maxima/minima using the appropriate feature of your graphing calculator.
 - (d) Compose, combine, and decompose functions.
 - (e) Evaluate a function.
 - (f) Find zeros of a function.
 - (g) Find the inverse of a function.
2. Analyze/graph a function (to include polynomial, rational, exponential, logarithmic, and trigonometric functions.)
3. Find and simplify the difference quotient. Find the slope of the secant line. Find the average rate of change.
4. Solve algebraically:
 - (a) Find all zeros (real and non-real) of polynomial functions. Factor a polynomial.
 - (b) Solve polynomial and rational inequalities.
 - (c) Solve exponential and logarithmic equations.
 - (d) Solve trigonometric equations.
4. Trigonometry:
 - (a) Find the exact value of the six trigonometric functions of any angle in standard position;
 - (b) Determine the amplitude, period, and phase shift of a sinusoidal function.
 - (c) Use Fundamental Trigonometric Identities, Sum/Difference Formulas, and Double-Angle Formulas to evaluate trigonometric expressions and solve trigonometric equations.
5. Application Problems:
 - (a) Find the maximum/minimum value of a function and interpret in the context of the situation.
 - (b) Construct functions from a word problem
 - (c) exponential growth and decay
 - (d) Solve right triangles.
 - (e) Solve oblique triangles.
 - (f) Use your graphing calculator to find a regression equation
6. True/False