

MA 180 Final Exam Outline

The final exam is Thursday, August 4th from 6:30 to 8:30 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.

The numbers in parentheses () indicate [MA 180 Course Review](#) problems. There is a final exam review available in MathXL.

Students should be able to:

- Given a function:
 - State the domain using appropriate math notation (1)
 - Identify the interval(s) where function is increasing/decreasing; (5)
 - Approximate the relative maximum/minimum of a function given a graph or using the appropriate feature(s) of our graphing calculator.
 - Compose and combine functions. (11)
 - Decompose functions
 - Evaluate a function (3)
 - Find zeros of a function (3)
 - Find the inverse of a function. (21) (23)
 - Classify functions as polynomial, linear, rational exponential, logarithmic, or sinusoidal. (42) (43)
- Analyze the graph of a function (to include polynomial, rational, exponential, logarithmic, or trigonometric functions.) (12) (15) (16) (22) (24) (29) (30) (42).
- Graph a piecewise-defined function.
- Find and simplify the difference quotient. (4)
- Find the slope of a secant line and equation of the secant line.
- Find the average rate of change. (4) (42b)
- Solve equations algebraically:
 - find all zeros (real and non-real) of polynomial functions (13)
 - solve rational equations (16)
 - solve inequalities. (18) (45)
 - solve exponential and logarithmic equations (19) (25) (26)
 - solve trigonometric equations. (37) (39)
- Solve equations using the ZERO and INTERSECT features of your graphing calculator.
- Trigonometry:
 - find the exact value of the six trigonometric functions of any angle in standard position; (28) (33) (34)
 - determine the amplitude, period, and phase shift of a transformed function;(29) (30)(31)
 - Use Fundamental Trigonometric Identities, Sum/Difference Formulas, and Double-Angle Formulas to evaluate/simplify trigonometric expressions and solve trigonometric equations. (32)(33)
- Application Problems:
 - Construct a function and find the maximum/minimum value (6)

- (b) exponential growth and decay; (20) (27)
- (c) right triangle trig, Law of Sines/Cosines (40)
- (d) use your graphing calculator to find a regression equation (14)

6. True/False