

# Math Analysis Final Study Guide

- 25 Multiple Choice Questions (2 points each = 50 points)
- 5 Free Response Questions (= 50 points)
- 100 minutes
- Counts as a double test grade

Topics included on the final exam:

## Chapter 1

1. Find equations of lines in general and slope-intercept form given a point and slope, two points, or a point and a parallel or perpendicular line (p. 86 #1)
2. Graph basic functions in graphing form by using shifts and stretch factors (vertical parabola, absolute value, square root, cubic, rational) (p. 86 # 13, 15)
3. Determine the domain or range of a function (p. 86 #5)
4. Combine functions using addition, subtraction, multiplication, or division (p. 86 # 16a, 16b)
5. Find the composition of two functions (p. 86 # 16c)
6. Determine if a function is odd, even, or neither (p. 86 # 7, 8)

## Chapter 2

1. Graph quadratic functions including the vertex (p. 175 #1)
2. Graph polynomial functions by finding intercepts and using correct end behavior (p. 175 #3, 249 # 16)
3. Divide polynomials using long division or synthetic division (p. 175 #5, 6)
4. Simplify expressions with complex numbers (p. 175 #11-17)
5. Graph rational functions by finding vertical, horizontal, or slant asymptotes and using key points such as intercepts (p. 175 # 21)
6. Find a polynomial equation given the roots (p. 249 #22)
7. Find the number of possible positive and negative roots of an equation using Descartes' Rule of Signs
8. Determine the possible rational roots of an equation (p. 175 #8 - 10)
9. Solve a polynomial equation by guessing solutions from a list of possible rational roots or by using given roots (recognizing that the conjugate of a complex root is also a root) (p. 175 #8 - 10)

## Chapter 3

1. Graph exponential functions by using shifts (p. 248 #1)
2. Simplify logarithm expressions (p. 248 # 4-6)
3. Graph a logarithmic function by using shifts (p. 248 # 9)

4. Use properties of logarithms to write logarithmic expressions using a single log (p. 248 # 16-18)
5. Use properties of logarithms to expand logarithmic expressions as the logarithm of a single quantity (p. 248 # 14,15)
6. Solve equation with a variable in the exponent (p. 248 # 19, 23)
7. Solve equations with logarithm expressions on both sides
8. Solve equations with logarithm expressions on one side (p. 248 # 22, 28)

## **Chapter 8**

1. Expand a binomial expression (p. 631 #16)
2. Find a specified term of a binomial expansion using the binomial theorem
3. Generate the terms in a sequence given a formula or a recursive definition of a sequence (p. 631 # 1-3)
4. Find a specified term of an arithmetic sequence
5. Find the sum of an arithmetic series (also given the series in sigma notation) (p. 631 # 13)
6. Find a specified term of a geometric sequence
7. Find the sum of a geometric series, including an infinite geometric series (also given the series in sigma notation) (p. 631 # 14,15)
8. Solve a problem involving a permutation or combination. (p. 631 # 22, 23)