

Math 104: Section Highlights (up to the midterm).

B.1. Distance formula, midpoint formula, equations of circles.

B.2. Graphing equations by plotting points and on the calculator.

B.3. Solving linear equations algebraically and graphically (two graphical methods: intercept, intersect), identifying types of equations (identity, conditional, contradiction), solving rational equations, solving quadratic equations (factoring, extracting square roots, completing the square, quadratic formula), solving higher-degree polynomial equations.

B.4. Solving simple inequalities algebraically and graphically, solving absolute-value inequalities, solving polynomial inequalities.

7.1. Solving systems of equations by substitution and by graphing.

7.2. Solving systems of equations by elimination.

7.4. Solving systems of equations with matrices.

1.1. Slope, types of equations of lines (general form, slope-intercept form, point-slope form, vertical, horizontal), parallel and perpendicular lines.

1.2. Identifying functions algebraically, piecewise defined functions.

1.3. Domain and range, identifying functions graphically (vertical line test), even and odd functions.

1.4. Transformations (shifting up/down/left/right, reflecting across x-/y- axis, horizontal/vertical shrink/stretch).

1.5. Arithmetic combinations of functions (sum, difference, product, quotient), composition of functions.

1.6. Verifying inverse functions, one-to-one functions (horizontal line test!) and the existence of inverses, finding inverses algebraically.

2.1. Standard form of quadratic functions (vertex, leading coefficient, etc.), maximum/minimum values.

2.2. Understanding higher-degree polynomial functions, leading coefficient test, correspondence between zeros and factors (i.e. factor theorem), multiplicity of zeros.

2.3. Rational zero test, synthetic division, polynomial long division, remainder theorem.

2.4. Intro to complex numbers, sum/difference/product/quotient of complex numbers, complex conjugation.

2.5. Fundamental theorem of algebra, linear factorization theorem, finding all zeros of a polynomial function.

2.6. Rational functions, finding vertical/horizontal asymptotes, graphing rational functions (look for domain, intercepts, asymptotes, and holes).

2.7. Graphing rational functions by hand, oblique asymptotes.

3.1. Intro to exponential functions and their graphs.

3.2. Intro to logarithmic functions and their graphs, inverse relationship of exponential and logarithmic functions.

3.3. Properties of logarithms (product property, quotient property, power property).

3.4. Solving exponential (same-base type, different-base type, and “quadratic” type) and logarithmic equations.

3.5. Exponential and logarithmic models (compound interest, exponential growth and decay).