

MATH 1203 / 1204 LESSON TOPICS 2015/2016

Lesson 1 Topic (Functions)

1. Formal definition of relation, formal definition of function, Vertical Line Test
2. Interval notation, domain and range
3. Function notation, evaluating functions symbolically and graphically, x- and y-intercepts
4. Combination of functions (will show up on Lesson 2 homework)

Lesson 2 Topic (Graphs and Transformations)

1. Transformations: Horizontal/vertical shifts, horizontal/vertical stretch/shrink
2. Transformations: Reflections, Horizontal Line Test for one-to-one functions, finding inverses graphically
3. Function composition, finding inverses symbolically

Lesson 3 Topic (Linear)

1. Definition of a linear function, slope equation, x- and y-intercepts, average rate of change
2. Slope-intercept form, point-slope form
3. Parallel and perpendicular lines, horizontal and vertical lines

Lesson 4 Topic (Quadratic)

1. Definition of a quadratic, standard and vertex form (no completing the square), finding the vertex
2. Axis of symmetry, domain and range, minimum or maximum
3. Finding zeros: factoring (Zero Product Property), quadratic formula, graphically, square root property

Lesson 5 Topic (Polynomials)

1. Definition of a polynomial, increasing, decreasing or constant intervals
2. Relative and absolute extrema, zeros with multiplicity
3. End behavior/degree, leading coefficients

Lesson 6 Topic (Absolute Value and Rational Functions)

1. Definition of absolute value functions, domain and range, solving absolute value equations
2. Definition of rational functions, domain, vertical asymptotes and holes
3. Horizontal asymptote rules, graphing rational functions, range

Lesson 7 and 8 Topic (Exponential and Logarithms)

1. Definition of an exponential function, introducing the number e , graphing exponential functions
2. Domain and range of exponentials, graphing with transformations
3. Interest formulas and other applications
4. Definition of a logarithmic function, graphing log functions, domain and range
5. Changing from exponential to logarithmic form, natural logarithm, common logarithm
6. Exponential and log functions as inverses, evaluating logarithms using inverse properties
7. All logarithmic properties (product, quotient, exponent, change of base)
8. Using logs to solve exponentials and using exponentiation to solve logs
9. Application problems (including exponential growth and decay)

Lesson 9 Topic (Regression)

1. Regression using graphing calculator for all different function types, R v. R^2 , End behavior

Lesson 10 Topic (Linear Systems)

1. Solving systems of linear equations in two variables using the substitution, elimination and graphing
2. Solving systems of linear equations in three variables using matrices, special cases of systems in two variables (parallel, perpendicular, coinciding lines), special cases of systems in three variables
3. Systems of equations word problems

Lesson 11 Topic (Non-Linear Systems)

1. Solving systems of nonlinear equations in two variables using substitution and addition methods
2. Application problems

Lesson 12 Topic (Inequalities)

1. Solving simple and compound linear inequalities algebraically and graphically
2. Solving systems of linear inequalities algebraically, numerically, and graphically
3. Solving simple quadratic inequalities algebraically and graphically
4. Solving systems of quadratic inequalities algebraically and graphically
5. Solving absolute value inequalities
6. Solving exponential and logarithmic inequalities