Study Guide for the Math 3 Exam

Unit 1

- I can compare key features of two different functions each with unique representations such as symbols, graphs, tables, or with verbal descriptions.
- I can use function notation to evaluate piecewise-defined functions for inputs in their domains.
- I can build a new function, in a real life situation, by combining standard function "types" using arithmetic operations.
- I can make sense of a function by extending it graphically or in a table.
- I can understand the effects on a graph through transformations graphically.
- I can create equations and inequalities in one and two variables that represent absolute value and piecewise defined relationships.
- I can use absolute value equations and inequalities in one variable to solve problems algebraically and graphically.
- I can create systems of equations and/or inequalities to model situations in context.
- I can identify and interpret parts of piecewise-defined and absolute value expressions.
- I can use technology to solve equations through multiple representations (tables and graphs).

Unit 2

- I can use technology to solve equations through multiple representations (tables and graphs).
- I can create and graph exponential equations with one or two variables and use them to solve problems algebraically.
- I can identify and interpret parts of an exponential expression and relate them to a real-world situation.
- I can use the properties of exponents to write equivalent forms of exponential expressions and state the domain.
- I can identify and describe the effects of transformations of exponential and logarithmic equations in relation to their parent functions.
- I can graph and describe key features of exponential and logarithmic functions with and without technology.
- I can use different representations to compare key features of logarithmic and exponential functions and interpret them in context.
- I can build exponential functions to represent relevant relationships/quantities given a real-world situation or mathematical process.
- I can find and apply the inverse relationship between exponential and logarithmic equations through different representations.
- I can determine if the inverse function exists through different representations and use it to solve real-world problems.
- I can use logarithms to solve exponential models.

Unit 3

- I can identify the number of solutions to a polynomial as exactly the degree of the polynomial, including multiplicities, Real, and Complex solutions.
- I can identify the constant, linear, quadratic and lead terms, lead coefficients and degree of a polynomial.
- I can divide polynomials by using long division and synthetic division.
- I can apply the remainder theorem.
- I can apply the factor theorem.
- I can create and solve one and two variable polynomial equations algebraically and graphically.
- I can identify the key features of a polynomial function.

- I can compare key features of two given functions in a variety of representations (equations, graphs, table of values, verbal description).
- I can create a polynomial function given the zeros or a graph.
- I can determine whether an exponential or polynomial function increases more rapidly.
- I can use rules of transformations on polynomial functions.
- I can interpret key features of functions in context.

Unit 4

- I can simplify rational expressions by factoring and long division
- I can multiply and divide rational expressions.
- I can add and subtract rational expression with linear denominators.
- I can graph rational functions and identify key features: Domain, asymptotes and holes, end behavior and evaluate rational functions from a table.
- I can solve rational equations and inequalities with one variable.

Unit 5

- I can use volume formulas to solve problems.
- I can use geometric concepts to model and solve real-world situations.

Unit 6

- I can recognize major arcs, minor arcs, semi circles, central angles and their measures.
- I can find arc length.
- I can use relationships between arcs and chords, and chords and diameters.
- I can find measures of inscribed angles, and measures of angles of inscribed polygons.
- I can use properties of tangents and solve problems involving circumscribed polygons.

Unit 7

- I can find measures of angles formed by lines intersecting on or inside a circle
- I can find measures of angles formed by lines intersecting outside the circle.
- I can find measures of segments that intersect in the interior of a circle.
- I can find measures of segments that intersect in the exterior of a circle.
- I can use the Pythagorean Theorem to derive the equation of a circle.
- I can complete the square to find the center and radius of a circle

- I can define a radian measure of an angle as the length of the arc on the unit circle subtended by the angle.
- I can explain how a ratio represents a value of a trig function for an angle.
- I can use key features to construct the graph of sine and cosine functions and interpret in context.
- I can state the amplitude, period, and midline of sine and cosine functions.
- I can use technology, graphs, and tables to compare sine graphs.

- I can explain that the radius of a circle is the ratio of the length of a subtended arc and its corresponding central angle.
- I can analyze sine and cosine functions using a table and/or graph to show key features (i.e. domain, range, intercepts, intervals of increasing/decreasing, relative maximum and minimums, period, etc)
- I can use technology to investigate the parameters of a sine function, y = asin(bx) + h, and interpret key features in terms of a real world situation.
- I can work with angles in standard position to find coterminal and reference angles.

If we have extra time—stats refresher from middle school ☺