MAT 113, Test 2 Concepts

You should know how to do the following. The section number is given in parentheses at the end. (It looks long, but it is a thorough list, and I won’t be testing everything on it, either.)

- Know how to plot points in the Cartesian plane, and how to find the coordinates of a point in the Cartesian plane* (2.1)
- Find the distance between two points (2.1)
- Find the midpoint of the line segment $AB$, given coordinates for $A$ and $B$ (2.1)
- Sketch the graph of a generic equation (2.2)
- Find the $x$-intercept(s) and $y$-intercept(s) of a graph, given its equation (2.2)
- Know the standard form for the equation of a circle: Find the center and radius of a circle when given its equation, write the equation of a circle when given information (2.2)
- Test whether a graph has symmetry (with respect to the $x$-axis, with respect to the $y$-axis, with respect to the origin) (2.2)
- Use your calculator to sketch the graph of an equation* (2.3)
- Find the slope of the line passing through two points (2.4)
- Know the point-slope form of the equation of a line and the slope-intercept form of the equation of a line, as well as the equation of a vertical line (2.4)
- Determine when two lines are parallel or perpendicular (2.4)
- Know how to solve equations using your calculator (the “graphical method”)* (3.1)
- Complete the square OR simulate completing the square (3.3) (“Simulating” means using the statement that $x(x + A) = \left(x + \frac{A}{2}\right)^2 - \left(\frac{A}{2}\right)^2$).
- Solve a quadratic equation; you should know how to factor a quadratic expression, and how to complete the square, and knowing the quadratic formula wouldn’t hurt. Also, being able to tell how many solutions a quadratic equation has could come in handy. (3.3)
- Add, subtract, multiply, and divide complex numbers. Find the conjugate of a given complex number. Put a complex number into standard form $(a + bi)$. (3.4)
- Know how to manipulate radicals when square roots of negative numbers are involved. (3.4)
- Solve an equation involving polynomials. (Factor.) (3.5)
- Solve an equation which has one radical in it. (Move the radical to one side, everything to the other, and square both sides.) (3.5)
- Solve an equation involving fractions/rational functions (Cross-multiplication, adding fractions, multiplying both sides by a common denominator.) (3.5)
- Solve an equation using substitution (3.5)
- Solve an equation which involves fractional powers (3.5)
- Solve linear inequalities (3.6 or 3.7)
- Solve an inequality (using test points) (3.7)
- Solve equations and inequalities involving absolute value (3.8)
- Solve applications (story problems) using these techniques (almost every section, but 3.2 gives the method).

* You probably won’t be tested directly on this; you may have to do this when you’re working on a problem.