You should be able to:

1.2 Quadratic Equations

- Use the 3 methods for solving a quadratic equation—factoring (page 93 Ex. 1), the square root method (page 94 Ex. 3), completing the square (page 95 Ex. 4, 5), quadratic formula (page 97 yellow box, page 97 Ex. 6, page 99 Ex. 9).
- Solve a word problem that can be modeled by a quadratic equation (page 99 #10)

1.3 Complex Numbers; Quadratic Equations in the Complex Number System

- Solve a quadratic equation and simplify the solutions when the solutions are imaginary (page 110 Ex. 11).

2.1 The Distance and Midpoint Formulas

- Find the distance between two points using the distance formula (page 151 yellow box, page 152 Ex. 2).
- Find the midpoint of two points (page 154 yellow box, ex. 4)

2.2 Graphs of Equations in Two Variables; Intercepts; Symmetry

- Plot points on the coordinate plane.
- Find the intercepts given a graph (page 159 Ex. 4)
- Find the intercepts given an equation (page 160 blue box, Ex. 5)
- Identify symmetry with respect to the x-axis, y-axis, or origin given a graph or an equation (page 160-161 Ex. 5-8, page 162 gray box, page 162 Ex. 9)

2.3 Lines

- Calculate and interpret the slope of a line (page 167 yellow box, page 168 Ex. 1).
- Understand and be able to use the different forms for the equation of a line—point slope form (page 171 2nd yellow box), slope intercept form (bottom yellow box), general form (page 174 yellow box), vertical line (page 171 top yellow box), horizontal line (page 172 top yellow box).
- Understand the slope relationships for parallel lines (page 175 yellow box) and perpendicular lines (page 176 yellow boxes).
- Use the above and the given information to write the equation of a line (page 171 Ex. 5, 6, page 172 Ex. 7, page 175 Ex. 11, page 177 Ex. 13).
- Write a linear model given the data (such as the cereal box problem in the review).

2.4 Circles

- Understand the definition of a circle (page 182 top yellow box) and the standard form for the equation of a circle (page 182 bottom yellow box).
- Write the equation of a circle (page 183 Ex. 1).
- Find the center, radius, intercepts and graph a circle (page 183 Ex. 2, page 184 Ex. 3, page 185 Ex. 4).

3.1 Functions

- Understand the definition of a function (page 210 blue summary box).
- Be able to identify if a relation represents a function given a mapping, a set of ordered pairs or an equation (page 200 Ex. 1, page 202 Ex. 3).
- Find values of a function (page 204 Ex. 6).
- Find a difference quotient (205 Ex. 6h).
- Find the domain of a function given an equation (page 206 Ex. 8).
- Form the sum, difference, product and quotient of two functions (page 208-209 yellow boxes, page 209 Ex. 10).

3.2 The Graph of a Function

- Understand and be able to apply the Vertical Line Test (page 214 yellow box, page 215 Ex. 1).
- Obtain information such as domain, range, and intercepts from the graph of a function (page 215-216 Ex. 2, 3).
- Use a given function to model a situation such as average cost. (page 217 Ex. 4).

3.3 Properties of Functions

- State over what intervals a function is increasing, decreasing, or constant. Recall that open x-intervals are reported (page 224 – 226).
- Find the average rate of change of a function using definition in yellow box on page 228.
- Know that the average rate of change gives the slope of the secant line and use that information to write the equation of a secant line (page 228 – 230)
3.4 Library of Functions; Piecewise Functions

- You should know the general shapes and be able to use two to three points to quickly and accurately sketch the graphs from the library of functions (parent functions): $y = b, y = x, y = x^2, y = x^3, y = |x|, y = \sqrt{x}, y = \frac{1}{\sqrt{x}}$, and $y = \frac{1}{x}$. You should also know properties of these functions including any intercepts, asymptotes, their domains and ranges (pages 235 – 238).
- Be able to analyze and accurately graph a piecewise defined function. You should also be able to state the domain and range (page 239).
- Use a piecewise function to interpret and model a word problem (Example 4, page 241).