Study Guide for Exam CH 3 and 2.4, 4.1

The best way to prepare for this exam is to do lots of problems. Your MLP course has a review problem set and a practice exam and you can work these as many times as you like. You should work one or the other until you can do all problems easily. The practice exam has more problems (30) than the real thing (20).

Be sure to review the material in the handbook as well, especially the modeling problems on p. 85, the transformations on p. 103, the quadratic equations on p. 93, and the piecewise function graphs on p. 130. Remember that the handbook contains many worked examples for these topics.

Here are the main topics in each section of the textbook:

Section 2.4 Solving Inequalities   pp. 146 – 147: #3, 9, 17, 19, 24, 33

- Know how to solve inequalities of all types. Remember to *change the direction of the inequality sign* when you multiply or divide both sides by a negative number.
- You may be asked to solve a graphical inequality like #17, 18 on p. 146.
- You will be asked to set up an inequality involving a real world scenario, like #29, #33, #36, 43.

Section 3.4 Quadratic Models pp. 223 - 226: #11, 27, 32

- Be able to use second differences to determine whether or not a given data set is exactly quadratic.
- Given a set of data, be able to create a quadratic regression model using your graphing calculator.

Section 3.1 Quadratic Functions; Parabolas pp. pp. 178 – 182: #5, 21, 53, 57, 61, 75

- Given a quadratic function, be able to determine if the vertex is a max or min.
- Given a quadratic function, be able to find the vertex of its graph.
- Given a quadratic model of a real world scenario, be able to find and interpret the vertex.

Section 3.2 Solving Quadratic Equations pp.   #3, 7, 27, 28, 31- 34, 39, 53, 54

- Be able to solve a quadratic equation by factoring
- Be able to solve a quadratic equation by using the quadratic formula. You need to simplify any radicals in the solution and then simply the final answer. All answers must be given in exact form (i.e. no decimals).
- Be able to construct the profit function if given the revenue and cost function (like #53 on p. 196).

- Be able to interpret a given function in a real world scenario and solve an application problem (like 49, 51, 53, 55).   Most of these application problems will be solvable by factoring, though the numbers may be large. Remember to divide both sides through by the GCD of all coefficients before factoring.

Section 4.1 Transformations of Graphs   p. 259 # 1 – 16, 19 - 21

- Given a sketch like those on p. 103 in the Handbook be able to write an appropriate function.
- Given a function (like #1 – 16 on p. 259), be able to sketch its graph by hand.
- Given a description (like #19-21 on p. 259), be able to write the function.

Section 3.3 Piecewise-Defined Functions   p. 209 – 210: 9, 13, 14, 17, 19, 21, 22, 29, 31, 46, 48. Also pp. 124-126 in the handbook

- Be able to evaluate a given a piece-wise defined function. Remember that given any function, each input has ONLY ONE OUTPUT, so use just ONE of the given rules to evaluate the function.
- Given a piecewise-defined function, be able to sketch its graph
- Given the graph of a piecewise defined function, be able to determine its formula(s).
- Be able to evaluate and interpret a given piecewise function rule in context.