Objectives Assessed by MA 153 Test 1: Chapter 1 (not 1.6), Chapter 2, and Sections 3.1 and 3.2
(See also your *eHW* assignments, and suggested text homework for more practice.)

1. Understand functional notation and use the graph, table, equation, or verbal description.
   Section **1.1** #1-12, 15, 16, 19, 26cd and **Section 2.1** #35 and **Check Your Understanding** (p 53) #1-10, 30
2. Determine if y is a function of x.
   Section **1.1** #7, 26ab and **Example 6** on page 6 and **Chapter 1 Review** #1-5, 31, 34
3. Identify whether a function is a (totally) increasing or decreasing function or identify intervals on which it is increasing and decreasing.
   Section 1.2 #9, 22 and **Example 1, 2, 3** on pp 12-13 and **Chapter 1 Review** #1-5 and **Check Your Understanding** (p 53) #13-14.
4. Determine the value of the average rate of change from a table of values, a graph, or an equation
   Section 1.2 #3-7, 10, 11, 15, 21 and **Example 2 and 4** on pp 12-14 and **Chapter 1 Review** #6, 7 and **Check Your Understanding** (p 53) #11-18, 24
5. Understanding the geometric interpretation of the average rate of change and the function notation for the average rate of change.
   Read bottom of page 13 and page 14. S**ection 1.2** #16,17 and **Check Your Understanding** (p 53) #8, 15, 17, 18, 19, 24
6. Given the equation of a linear function, find and interpret its slope and axis intercepts as well as sketch its graph.
   Section 1.3 #12, 23, 24, 27, 29 and **Section 1.4** #37, 40
7. Find a linear model if given an initial value and an average rate of change.
   Section 1.3 #11, 14, 15, 20, 24 and **Section 1.4** #16, 19, 21 and **Section 1.5** #31, 32 and **Chapter 1 Review** #21, 26, 27, 40
8. Find a linear model if given any value (not necessarily its initial value) and an average rate of change.
   Section 1.3 # 22 and **Section 1.4** #12, 30 and **Chapter 1 Review** #15
9. Find a linear model if given any two points. **Section 1.4** Examples 1 and 2 and Exercises #18, 22-30, 35, 40 and **Section 1.5** #22-25, 34 and **Chapter 1 Review** #10-12, 19, 20
10. Determine if a function is linear.
    Section 1.3 #1-6, 26 and **Chapter 1 Review** #8, 9, 39 and **Check Your Understanding** (p 53) #19, 20, 22
11. Understand the geometric properties of linear functions including:
    - when two lines are parallel and when they are perpendicular
    - when their y-intercepts are positive or negative
    - when they are increasing or decreasing (or neither)

    Section 1.5 #1-17, 24,25 and **Chapter 1 Review** #15, 18, 23-25 and **Check Your Understanding** (p 53) #23-40, 43-45
12. Construct linear models and find intersection points to solve problems and make predictions.
    Section 1.5 #31,32,36 and **Example 3** on pp 37-38 and **Check Your Understanding** (p 53) #41- 42 and
    Chapter 1 Tools (pp 58ff) # 31, 32,36
13. Evaluate functions with values that are *expressions* as well as *numbers*.
    Section 2.1 #1-34 and **Chapter 2 Review** #1, 2, 4, 25, 25 and **Check Your Understanding** (p 97) #1-3, 5-10
14. Solve equations and inequalities and interpret the results.
    Section 1.1 #1-4 and **Section 2.1** #1-18, 25, 27 and **Chapter 2 Review** #21-24, 35, 43 and **Check Your Understanding** (p 97) #4, 9 and **Chapter 2 Tools** (pp 102ff) # 77-99
15. Understand the domain and range of a function. Find these if given a function represented by a graph, table, equation, or verbal description. **Section 2.2** #1-29 and **Chapter 2 Review** #6-8, 10, 36 and **Check Your Understanding** (p 97) #9, 11-20
16. Use a graph, table, or an equation to evaluate a function or its inverse.
    Section **1.1** #1-4, 8-12, 26cd and **Section 2.4** #13-24, 26-32,35, 40 and **Chapter 2 Review** #37, 38, 41-43.
17. Interpret expressions or equations which involve function notation and inverse function notation.
    Section **1.1** #19, 26cd and **Section 2.1** #35 and **Section 2.4** #13-17, 28-32, 39, 40 and **Chapter 2 Review** #37, 38, 41, 42 and **Check Your Understanding** (p 97) #37-42
18. Determine the concavity of a function.
    Section 2.5 #1-19 and **Section 2.6** #27, 31 and **Check Your Understanding** (p 98) #37-42
19. Find and interpret the zeros of a function using the quadratic formula or factoring. Understand the factored form of a quadratic function. Find the maximum or minimum value. Solve quadratic equations algebraically, graphically, or using a table.
    Section 2.1 #9 and **Section 2.6** #1-28, 30, 31 and **Chapter 2 Review** #5 and **Check Your Understanding** (p 98) #43-51 and **Chapter 2 Tools** (pp 103ff) # 28-80, 87-96.
20. Given a formula, get an annual growth rate or decay rate, as well as an initial amount.
    3.1 – 16, 26 and **3.2** – 1, 38 and **Chapter 3 Review** –11
21. Given an annual growth rate or decay rate and an **initial** amount,
    a. write a formula $y = ab^t$ or b. predict a future value of y for some x and given a value of y, find a value of x.
    3.1 – 1-4, 21-25, 27-31, 33, 34 and **3.2** – 2, 3, 6-9, 11, 14, 18-20, 36, 37,39-41 and **Chapter 3 Review** – 10, 13-15, 47-49, 50
22. Given some data (which is not an initial amount)
    a. write a formula for an exponential function OR b. know what a and b mean in the formula $y = ab^x$ OR c. predict a future value of y for some x and given a value of y, find a value of x.
    Section 3.2- 5, 15-17, 21-23, 26-29, 31, 33, 34 and **Chapter 3 Review** – 16, 17, 34-37, 43-45, 50

Start your review by doing the following:
Check Your Understanding Chapter 1 (page 53): 1-45
Check Your Understanding Chapter 2 (page 97): 1-20, 26-33, 37-51
Check Your Understanding Chapter 3 (page 145): 1-16