

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

Tuesday, May 30

1. Understand functional notation and use the graph, table, equation, or verbal description.  
Section 1.1 #3, 5, 6, 7, 13, 19cd and **Check Your Understanding** (p 52) #1-10, 30
2. Determine if  $y$  is a function of  $x$ .  
Section 1.1 #3, 19ab and **Example 6** on page 6 and **Chapter 1 Review** #1-5, 27, 30
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** #2, 14 and **Example 1, 2, 3** on pp 11-12 and **Chapter 1 Review** #1-5 and **Check Your Understanding** (p 53) #13-14 and **Chapter 2 Review** #6-11.
4. Determine the value of the average rate of change from a table of values, a graph, or an equation  
**Section 1.2** #3, 4, 8 and **Example 2 and 4** on pp 12-14 and **Chapter 1 Review** #6, 7 and **Check Your Understanding** (p 53) #11-12, 16
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  
**Section 1.2** #9, 10 and **Check Your Understanding** (p 53) #8, 15, 17, 18, 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** #7-11, 24, 26 and **Section 1.4** #29 and **Chapter 1 Review** #44
7. Find a linear model if given an initial value and an average rate of change.  
**Section 1.3** #12, 14, 18 and **Section 1.4** #10, 14, 15 and **Chapter 1 Review** #22, 23, 38, 39, 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 1.3** #12, 14, 18 and **Section 1.4** #11,16-23, 26, 27, 32 and **1.5** # 19, 20, 21, 22 and **Chapter 1 Review** #22, 23, 38-40
10. Determine if a function is linear.  
**Section 1.3** #1-6 and **Chapter 1 Review** #8, 9 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** #1-15, 21, 22 and **Chapter 1 Review** #15-21 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** #25, 26 and **Example 3** on pp 35-36 and **Check Your Understanding** (p 53) #41- 42 and **Chapter 1 Tools** (pp 57ff) # 33-44
13. Evaluate functions with values that are *expressions* as well as *numbers*.  
**Section 2.1** #1-20, 22 and **Chapter 2 Review** #1, 2, 4, 6-11, 19, 20 and **Check Your Understanding** (p 93) #1-3, 5-10
14. Solve equations and inequalities and interpret the results.  
**Section 2.1** #1-20 and **Chapter 2 Review** #22-26, 31 and **Check Your Understanding** (p 93) #4, 9 and **Chapter 2 Tools** (pp 97ff) # 1-51,77-85, 87, 94, 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** #1-27 and **Chapter 2 Review** #6-16, 27d and **Check Your Understanding** (p 93) #9, 11-20,
16. Use a graph, table, or an equation to evaluate a function or its inverse.  
Section 1.1 #5, 6, 19cd and **Section 2.4** #1-8,17 and **Chapter 2 Review** #28, 29, 32, 33, 34
17. Interpret expressions or equations which involve function notation and inverse function notation.  
Section 1.1 #13, 19cd and **Section 2.1** #24 and **Section 2.1** #24 and **Section 2.4** #9-17, 20, 21 and **Chapter 2 Review** #28, 29, 32, 33, 34 **Check Your Understanding** (p 93) #26-33
18. Determine the concavity of a function.  
**Section 2.5** #11-17 and **Section 2.6** #14, 16 and **Check Your Understanding** (p 93) #34-39
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.  
**Section 2.1** #22 and **Section 2.6** #1-16, 18 and **Chapter 2 Review** #3 and **Check Your Understanding** (p 93) #40-48 and **Chapter 2 Tools** (pp 97ff) # 1-51, 77-85, 87, 94, 99
20. Given a formula, get an annual growth rate or decay rate, as well as an initial amount.  
**3.1** – 16, 25 and **3.2** – 5, 37 and **3.3** – 16, **Chapter 3 Review** –2, 45
21. Given an annual growth rate or decay rate and an **initial** amount,
  - a. write a formula  $y = ab^x$  or b. predict a future value of  $y$  for some  $x$  and given a value of  $y$ , find a value of  $x$ .**3.1** – 1-8, 17-22, 27, 28 and **3.2** – 2, 3, 6-11, 14-17, 35, 36,38-40 and **3.3** – 15, 18, 31 and **Chapter 3 Review** – 1, 4, 7-9, 25-29, 33
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  $x$ .**3.2**- 18-29, 31, 33, and **Chapter 3 Review** – 10, 11, 16-19, 22-24, 33