

**Objectives Assessed by MA 153 Test 2**  
**Section 2.6, Chapter 3 and Section 4.1**  
**Friday, Feb. 29, 2008**

1. 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 and its domain and range. Solve quadratic equations algebraically, graphically, or using a table. Write a quadratic function in factored form if given its zeros. **Section 2.1** #9 and **Section 2.6** #1-28, 30, 31 and **Chapter 2 Review** #5, 40 abc and **Check Your Understanding** (p 98) #43-51 and **Chapter 2 Tools** (pp 103ff) # 28-80, 87-96.
2. Use a graphing calculator to graph a function in an appropriate viewing window. Use built-in calculator features such as an intersection point finder, maximum/minimum finder, or zero finder to solve problems. **Section 1.3** –26-30 and **Section 2.6** #33
3. 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 **3.3** – 16, **Chapter 3 Review** –11
4. 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  $x$
  - c. given a value of  $y$ , find a value of  $x$  by use of a table or a graph. Document your solution appropriately.  
**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 **3.3** – 15, 18, 38 and **Chapter 3 Review** – 10, 13-15, 47-49, 50
5. Given some data (which is **not** an initial amount).
  - a. write a formula for an exponential function
  - b. know what  $a$  and  $b$  mean in the formula  $y = ab^x$ .
  - c. predict a future value of  $y$  for some  $x$
  - d. given a value of  $y$ , find a value of  $x$  by use of a table or a graph. Document your solution appropriately.  
**3.2**- 5, 15-17, 21-23, 26-29, 31, 33, 34 and **Chapter 3 Review** – 16, 17, 34-37, 43-45, 50
6. Match an equation to a graph. Know what  $a$  and  $b$  (or  $k$ ) mean in  $y = ab^x$  or  $y = ae^{kx}$ . Understand general shape, concavity, domain, range, asymptotes, etc.  
**3.3** – 3, 4, 19, 24, 25, 26, 37, 41 and **3.4** – 1, 2, 5, 6 and **3.5** – 5 **Chapter 3 Review** – 19, 20
7. Use the compound interest formula  $A = P(1 + \frac{r}{n})^{nt}$  or  $A = Pe^{rt}$  appropriately to
  - a. Find  $A$  if given the other values  $P$ ,  $r$ ,  $t$ , and/or  $n$ .
  - b. Find  $P$  if given the other values  $A$ ,  $r$ ,  $t$ , and/or  $n$ . (See Section **3.5** –16)
  - c. Find  $t$  if given the other values  $P$ ,  $r$ ,  $A$ , and/or  $n$  by use of a table or a graph. Document your solution appropriately.  
(Section **3.4** –8, 9, 16)
  - d. Find the annual growth rate (also called the effective annual yield) if given  $r$  and/or  $n$ .  
**3.4** – 8, 9, 15, 16 and **3.5** – 7, 8, 11-14, 16, 18-20, 24 and **Chapter 3 Review** – 32
8.
  - a. Recognize linear vs. exponential growth
  - b. Find formulas for linear functions and exponential functions if given its initial value and information on how it grows.
  - c. Solve an equation involving an exponential function and a linear function.  
Read page 118 **Exponential Growth Will Always Outpace Linear Growth in the Long Run** and read bottom of page 163 **Exponential Growth Problems That Cannot Be Solved By Logarithms** and do **3.2** --30 and **4.2** – 38, 39 and **Chapter 4 Review** 47gi
9. Understand the definition of a common and natural logarithm:
  - a. Write a statement involving exponential form into logarithmic form and vice versa.
  - b. Understand the inverse properties  $e^{\ln W} = W$  and  $\ln e^W = W$  or  $10^{\log W} = W$  and  $\log 10^W = W$   
Be able to write something like  $\frac{1}{\sqrt{e^x}} = e^{-x/2}$  and then find  $\ln\left(\frac{1}{\sqrt{e^x}}\right) = \ln e^{-x/2} = -\frac{x}{2}$
  - c. Know how to evaluate a logarithm such as  $\log_2 16$ . (See worksheet on logs).  
Section **4.1** –1-10, 19-21, 23abcf

Start Your Review by doing the following:

**Check Your Understanding Chapter 3** (page 137): 1-20, 24-32

**Check Your Understanding Chapter 4** (page 179): 1-5, 9, 15