

Objectives Assessed by MA 153 Test 2 - Chapter 4 and Section 5.1

1. Given a formula, get an annual growth rate or decay rate, as well as an initial amount. (Remember the percent growth rate for a decaying exponential is a negative percent rate.) **4.1** – 10-17, 19, 21, 22 and **4.2** – 1, 5, 35bc and **4.3** – 40 and **4.5** – 18, 26 and **Chapter 4 Review** – 38, 44, 45, 47, 68
2. 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 .**4.1** – 20, 23-40, 46-56 and **4.2** – 2, 3, 6-9, 15-17, 31, 36 – 42, 46 -49 and **4.3** – 7, 8, 15, 42, 44 and **Chapter 4 Review** – 15, 16, 27, 28, 34-36, 48, 60, 63
3. 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 and given a value of y , find a value of x .**4.2** – 10-14, 18-20, 23, 24, 32, 35 and **Chapter 4 Review** – 19 – 25, 29 - 33, 35, 64
4. 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.
4.2 – 35 and **4.3** - 7-14, 22-30, 35, 41 and **4.4** – 20-22 and **4.5** – 1-7, 33, 42, 44 **Chapter 4 Review** – 8
5. Use the compound interest formula $A = P(1 + \frac{r}{n})^{nt}$ or $A = Pe^{rt}$ appropriately to
 - a. Find one value if given the other values.
 - b. Find the annual growth rate (effective annual yield).**4.4** – 1-22 and **4.5** – 15-17, 23-27, 29, 30, 34, 36-43 and **Chapter 4 Review** – 17
6. Understand and use logarithms:
 - 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).
 - d. Understand and use power property (Bob Barker property) and sum and difference properties of logs.
5.1 – 1-28, 35-52 and **Chapter 5 Review** -- 21-23, 30-32, 59 and worksheet on logarithms. See also Chapter 5 Tools
7. Solve an exponential equation for exact solutions (and approximate solutions) using logarithms
 - a. with x on one side of the equation. See **5.1** 29, 30 and **Chapter 5 Review** – 7, 8
 - b. with x on one side – multistep See **5.1** #31-34, 57-62, 64, 65, 70, 71 **Ch 5 Review** -- 9, 10, 11, 13
See also Chapter 5 Tools.
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 152 **Exponential Growth Will Always Outpace Linear Growth in the Long Run** and read bottom of page 199 **Exponential Growth Problems That Cannot Be Solved By Logarithms** and do **4.2** – 33, 34 and **Chapter 4 Review** 18 and **Chapter 5 Review** – 33gi

Start Your Review by doing the following:

Strengthen Your Understanding Chapter 4: 1-32

Strengthen Your Understanding Chapter 5: 1-14, 18, 20-23, 27