

## EXAM II LIST OF TOPICS

Below are the topics we have covered in the course so far listed by chapter.

### (chapter 5) – Exponential and Logarithmic Functions

#### (5.1) – Combining Functions (page 349)

- Know how to perform the four basic operations on functions ( ) and know how to evaluate those functions at specific values analytically, numerically (given a table), and graphically (given a graph).
- Know how to find composite functions given each function, a table of values, or a graph of each function.
- Be able to find the domain of composite functions.

#### (5.2) – Inverse Functions and Their Representations (page 365)

- Know how to check if a function is one-to-one (and further, know what one-to-oneness means).
- Be able to find the inverse function of one-to-one functions (use the step by step process we went over in class with switching the x and y)
- Understand what it means for two functions to be inverses (know what inverse means)
- Know that when you compose a function with its inverse (and vice-versa) you get the input x.
- Understand what it means for two functions to be inverses in relation to their graphs (they are reflections across the line  $y=x$ )

#### (5.3) – Exponential Functions and Models (page 380)

- Know how to find the equation of an exponential function of the form  $y = ab^{cx+d}$  given a table of data.
- Know the formulas for:
  - Compound interest
  - Continuous compound interest
  - Radioactive decay
- Know how to use the above formulas (examples are given in the chapter section)

#### (5.4) – Logarithmic Functions and Models (page 399)

- Know the basic facts/properties about logarithms (i.e. they are the inverse of exponential functions,  $\log_b(b^x) = x$ ,  $b^{\log_b(x)} = x$ , etc...)
- Understand what a logarithm is asking you ( is asking: “to what power must be raised in order to get ”).
- Know how to solve simple logarithmic and exponential equations (using the fact that log functions and exponential functions are inverses).
- Be able to convert from exponential form to logarithmic form

#### (5.5) – Laws of Logarithms (LoLs) (page 415)

- Know the 4 LoL’s and how to use them to expand or combine expressions.
- Know how to use the change of base formula

**(5.6) – Exponential and Logarithmic Equations (page 423)**

- Know how to solve more complex logarithmic equations
- Know how to solve more complex exponential equations
- **Essentially, section 5.6 is all about solving equations utilizing the laws of logarithms in combination with the solving skills you learned in section 5.4 (by using the inverse function to get**

~~**(5.7) – Constructing Nonlinear Models (page 460)**~~

- ~~○ Know how to make a scatterplot of given data and determine which model to use~~
- ~~○ Understand how to find the “least squares” (best fit) regression line on your calculator~~

~~**(3.5) – Transformations (page 206)**~~

- ~~○ Know how to use transformations to manipulate graphs and their tables.~~

**(Notecard worthy information) –** Just a small sample of things you may want to put on the notecard.

- Formulas for compound interest and continuous compound interest
- Formula for half-life
- Maybe an example of composition of functions
- Major definitions (like def. of inverse)
- Laws of Logs
- Change of base formula
- Etc...

**(Additional Thoughts)**

Remember: you have only 50 minutes to take the exam – therefore I won’t be able to put ALL of the stuff on this review on the exam itself. There are 3 main resources I use for my exams:

- i) Notes
- ii) Homework
- iii) Review (both online and in class)

Please make sure you are as ready as you can be! My general advice is to **put yourself into a testing situation**. I think that a lot of students may study for an exam, but never actually set aside 50 minutes to do 12 or 13 problems – forcing them to be in a time situation. That would be analogous to running a race but never running a practice race, or a tempo run. **Make sure you try to do a set amount of problems in 50 minutes** – that way when you get to the exam, the time constraint isn’t so much stress!