

### Section 8.1: Systems of Linear Equations

- Understand the definition of a system of linear equations in two unknowns as well as the three possibilities for the number of solutions to such a system [1, none, or infinitely many].
- Know how to find the solution to a system of linear equations using the substitution method.
- Know how to find the solution to a system of linear equations using the elimination method.
- Be able to verify solutions to a system of equations algebraically and be able to graph the lines involved to verify the number of solutions.
- be able to solve basic application problems using systems of linear equations.

### Section 4.1: Exponential Functions

- Know the definition of an exponential function  $y = b^x$  including the values that  $b$  can have. Also know the basic shape of the graphs of exponential functions and be able to draw the graph of a given exponential function.
- Memorize the compound interest formula and be able to use it and other exponential functions to solve basic application problems.
- Be able to solve exponential equations by using the one-to-one property of exponential functions.
- Understand the number  $e$  and the fact the the function  $P = e^{rt}$  is used to model situations involving “continuous” growth or decay.
- Be able to draw graphs of functions involving  $e$  and to solve equations involving  $e$ .

### Section 4.2: Logarithmic Functions

- Know the definition of  $\log_a x$  and understand how to translate between logarithmic and exponential form. Also know the notation for  $\ln$  and  $\log$  (log base  $e$  and base 10)
- Be able to draw the graph of logarithmic functions and evaluate logarithmic expressions.
- Be able to use shifts of functions to draw graphs related to the graph of a logarithmic function.
- Know how to solve logarithmic equations by translating to exponential form and by using the one-to-one property.
- Be able to use logarithms to solve application problems.

### Section 4.3: Properties of Logarithms

- Memorize the properties of logarithms and be able to apply them both to expand logarithmic expressions and to combine logarithms into a single expression.
- Be able to use the properties of logarithms in order to solve logarithmic equations.
- Be able to use the change of base formula to write a compute approximate values of logarithmic expressions.
- Be able to write any exponential as an exponential base  $e$ .

### Section 4.4: Exponential and Logarithmic Equations

- Understand how to solve exponential and logarithmic equations of various forms by using the properties of exponents and logarithms.

### Section 4.5: Exponential Growth and Decay; Modeling Data

- Understand how exponential and logarithmic functions can be used to model the change in quantities over time.
- Be able to solve half life, interest and investment, and population growth problems using exponential models and by solving equations using exponential and logarithmic methods.

### Review Problems:

Chapter 8 pp. 815-816 # 1, 2, 3, 5, 6, 10

Chapter 4 pp. 476-478 # 5, 6, 7, 10, 11, 12, 13, 14, 16, 17, 19, 20, 22, 23, 24, 25, 27, 28, 30, 33, 34, 36, 41, 45, 50, 52, 54, 56, 58, 61, 62, 64, 66, 70, 76, 78, 84, 85, 88, 91