

Section 5.1: Inverse Functions

Key Topics:

- Know the definition of a one-to-one function and understand and be able to apply the horizontal line test.
- Be able to prove whether or not a given function is one-to-one.
- Know the definition of inverse functions and the Theorem on Inverse functions.
- Be able to use algebra to find the inverse of a function
- Understand the relationship between the domain, range, and graph of a function and those of its inverse (symmetry across the line $y = x$).

Section 5.2: Exponential Functions

Key Topics:

- Know the definition of an exponential function $y = a^x$ including the values that a 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.

Section 5.3: The Natural Exponential Function

Key Topics:

- Understand the number e and the fact that the function $f(x) = e^x$ is used to model situations involving “continuous” growth or decay.
- Memorize the continuously compounded interest equation and be able to use it to solve application problems.
- Be able to draw graphs of functions involving e and to solve equations involving e .

Section 5.4: Logarithmic Functions

Key Topics:

- 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.
- Know how to solve logarithmic equations by translating to exponential form and by using the one-to-one property.

Section 5.5: Properties of Logarithms

Key Topics:

- Memorize the properties of logarithms and be able to apply them both to expand logarithmic expressions and to combine logarithmic expressions.
- Be able to use the properties of logarithms in order to solve logarithmic equations.

Section 5.6: Exponential and Logarithmic Equations

Key Topics:

- Know the change of base formula and how to rewrite and compute logarithms using this formula.
- Understand how to solve more advanced exponential and logarithmic equations by using the properties of exponents and logarithms.

Review Problems: Chapter 5 # 3, 5, 10, 17, 24, 25, 27, 30, 35, 43, 45, 46, 53, 56, 60