

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.

Section 3.1: Quadratic Functions

- Understand the basic form for the graph of a quadratic function $f(x) = ax^2 + bx + c$
- Be able to use completing the square to put a quadratic function into standard form.
- Understand how to find the intercepts and vertex of the graph of a quadratic function and be able to graph the function in the xy -plane.
- Be able to solve basic applications (like projectile motion and falling objects) using quadratic functions.

Section 3.2: Polynomial Functions and Their Graphs

- Know how to use the degree of a polynomial and its leading coefficient to determine the end behavior of a polynomial function.
- Understand the definition of a root (or zero) of a polynomial function and be able to find the roots of a polynomial that factors.
- Know the definition of the multiplicity of a zero and how this impacts the graph of the polynomial function at that point.
- Memorize the intermediate value theorem and be able to apply it to show that a polynomial must have a zero between two given x -values.
- Understand the definition of a turning point of a polynomial. Also know the connection between the degree of a polynomial and the maximum number of roots and turning points in the graph of the polynomial.
- Be able to combine all these ideas in order to draw an accurate graph of a given polynomial function.

Review Problems:

Chapter 4 pp. 476-478 # 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

Chapter 3 pp. 406-407 # 1, 2, 4, 5, 7, 9, 10, 11, 12, 15, 16, 17, 18, 21, 22, 25, 26