Math 103 – Intermediate Algebra
Test 4 Review Sheet
Winter 2023

Test 4 covers Sections 7.6, 9.5 – 10.4

Expressions

Logarithmic Expressions

- ☐ Be able to evaluate a logarithmic expression. (Sections 10.3)
- ☐ Know how to use the change of base formula to evaluate a logarithmic expression. (Section 10.4)
- ☐ Be able to use the properties of logarithms to expand or condense a logarithmic expression. (Section 10.4)

Equations

Exponential and Logarithmic Equations

- ☐ Be able to solve exponential equations. (Section 10.2)
- ☐ Be able to write a logarithmic equation in exponential form. (Section 10.3)
- ☐ Be able to write an exponential equation in logarithmic form. (Section 10.3)
- ☐ Be able to solve logarithmic equations and check for extraneous solutions. (Section 10.3)

Inequalities

Rational and Quadratic Inequalities

- ☐ Be able to solve rational inequalities and graph the solution sets on the real number line. (Section 7.6)
- ☐ Be able to solve quadratic inequalities and graph the solution sets on the real number line. (Section 9.8)

Functions

Quadratic Functions

- ☐ Given a quadratic function, know how to find if the parabola opens upward or downward, the axis of symmetry, the vertex, and the intercepts. (Section 9.6)
- ☐ Be able to sketch the graph of a quadratic function. (Sections 9.6 and 9.7)
- ☐ Know how to write a quadratic function in standard form and find the vertex of its graph. (Section 9.7)

Exponential Functions

- ☐ Be able to sketch the graphs of an exponential function and transformations of the graph. (Section 10.2)
- ☐ Know how to identify the horizontal asymptote for the graph of an exponential function or a transformation of the graph. (Section 10.2)

Composite, Inverse and One-to-One Functions

- ☐ Given two functions, be able to find the composition at a given x-value (Section 10.1)
- ☐ Be able to find $(f \circ g)(x)$, $(g \circ f)(x)$, and $(f \cdot g)(x)$ given $f(x)$ and $g(x)$. (Section 10.1)
- ☐ Know the definition of a one-to-one function and how to use the horizontal line test to determine if a function is one-to-one. (Section 10.1)
- ☐ Know the definition of an inverse function. (Section 10.1)
- ☐ Know how to verify algebraically that two given functions are inverses functions of each other. (Section 10.1)
- ☐ Be able to find the inverse function of a one-to-one function (Section 10.1)
- ☐ Be able to graph a function and its inverse function on the same set of axes (Section 10.1)

Logarithmic Functions

- ☐ Be able to sketch the graphs of a logarithmic function. (Section 10.3)
- ☐ Know how to identify the vertical asymptote for the graph of a logarithmic function. (Section 10.3)

Applications

- ☐ Be able to solve applications modeled by quadratic equations. (Section 9.5)
- ☐ Be able to solve applications that involve finding the maximum value or minimum value of a quadratic function. (Section 9.6)
- ☐ Be able to solve applications involving an exponential model. (Section 10.2)
  (The compound interest formulas and the exponential growth and decay formula will be given, if needed.)
- ☐ Be able to solve applications involving a logarithmic model. (Section 10.3)
  (The decibel level formula will be given, if needed.)

Review Problems

Chapter 7 Review (pg 753): 473, 475

Chapter 9 Review (pg 1010): 467, 469, 471, 473, 475, 479, 481, 483, 485, 487, 489, 491, 493, 495, 496, 499, 501, 503, 505, 507, 509, 511, 513, 515, 517, 523

Chapter 10 Review (pg 1095): 357, 359, 361, 363, 365, 366, 367, 369, 371, 373, 374, 376, 379, 381, 383, 385, 387, 389, 391, 393, 395, 397, 399, 401, 403, 407, 408, 410, 411, 413, 415, 417, 419, 421, 423, 427, 429, 431