

Newberger, MATH 112-16, Spring 05

Homework: Review Sheet for Exam 2

This exam covers Sections 3.1, 3.2, 3.4, 3.5, 3.6 and 3.7. In addition, we covered Sections P.7 and 1.3 on WeBWork.

Topics:

From Section 3.1: Know how to evaluate a function at a given number (for example given a formula for $f(x)$, be able to find $f(5)$ (by plugging 5 in for x))(see problems #25-34 in Section 3.1). In particular, be able to evaluate piecewise functions (see Example 3 on page 217, and problems #21-24 on page 221). Know what the domain of a function is and how to determine it from the formula.

From Section 3.2: Know how to get information off of a graph, including the domain and range of the function and its values (for example, given the graph, be able to find $f(a)$ for a given a). Know how to graph a line, and find the x -intercept and y -intercept of a line (See also Section 2.4). Know how to graph a piecewise function (see Example 5 and 6 on page 227, and problems #38-50 on page 234). Understand the vertical line test, and be able to use it to determine whether or not a given graph is the graph of a function.

From Section 3.4: Know how to modify a formula in order to transform the graph by shifting up, down, left or right or by reflecting across the x - or y -axes. You will be given a modification of a formula and asked how it changes the graph (see problems #1-10 page 255, and #18,19 page 256). You will be given a formula for a function, like $f(x) = x^2$, for example, and asked to modify the formula so that the new graph looks like the old graph shifted and/or reflected in a given way (see problems #11-18, 27-32 pages 255-256). You will be given a graph of a function and asked to draw the graph of a modified version of that function (see problems #19,20 page 257). Use graph shifting techniques, along with the graphs of standard functions given on page 232 to graph (see problems #33-48 page 257). Understand how the domain and range of the function change when it is transformed by shifting and reflecting (see problem (4) on the Transforming Graphs Hand Graded Homework).

From Section 3.5 Given a quadratic polynomial, be able to complete the square to write it in standard form (see page 269). Be able graph a parabola from its standard form (by transforming the graph of x^2) (see page 267 #19-28). Be able to use the quadratic formula to find the zeros of a quadratic function (find the zeros of function $f(x) = ax^2 + bx + c$, by setting it equal to zero and solving for x) (see Section 1.3). Know

the vocabulary: vertex, maximum, minimum and zeros, and be able to find these from the formula and identify these on a graph (see problems #28-40 on page 266).

From Section 3.6 Know how to compose two given functions (i.e. find $f \circ g$), given formulas for f and g (see Problems #29-44 page 276). Know how to evaluate the composition of two functions given their graphs (see Problems #23-28 page 276).

From Section 3.7 Know how to use the horizontal line test in order to determine whether or not a given function has an inverse on its given domain (see Example 2 page 281 and Problems #1-6 page 286). Be able to find the inverse of a function (Example 6,7 and 8 page 283, and Problems 31-50), and verify if a pair of given functions are inverses (see Example 5 page 283 and Problems #21-30, page 286). Know how to graph the inverse of a function given the graph of the function (see Problems #65,66, page 287).

Word problems involving quadratics Given a formula that models the position of an object as a function of time, be able to answer questions about times at which the object reaches given locations, and the locations at which the object resides at given times. See #37 and 38 on page 268, Example 6 and 7 page 103, 1-4, and Problems #87, 88, 89, 90 page 1-7.