**Exam 1 Review**

**(Covers 1.3, 1.4, 1.6, 1.7, 8.1, 8.2, Ch 2)**

**Sec 1.3**: Equations and Graphs in Two variables

* Distance Formula
* Midpoint Formula
* Slope Formula
* Graph Lines
* Find the equation of a circle using completing the square, identify the center and radius of a circle, and then graph the circle.

*Problems to try*

1. Find the slope, distance, and midpoint between and
2. Find the center and radius of the circle and graph the circle:

**Sec 1.4**: Linear Equations in Two Variables

* Write an equation using slope-intercept form or point-slope form. Be able to write the equation using a slope and a point or given two points.
* Find Parallel and Perpendicular lines

*Problems to try*

1. (Two parts) Find an equation thast is parallel and another equation that is perpendicular to the line and goes through the point
2. Find the equation of the line through the points and .

**Sec 2.1**: Functions

* Be able to identify whether points, graphs, equations, etc. are functions or not and explain why they are or are not.
* Find the domain and range of functions that are given as points, graphs, or equations.
* Be able to find function values such as given any function.
* Be able to use the difference quotient:

*Problems to try*

1. Given find the following: , ,
2. Find the difference quotient for

**Sec 2.2**: Graphs of relations and Functions

* Be able to identify the different functions, domain and range, and increasing decreasing of each function.
* Graph step functions and piecewise functions.
* Given the graph be able to write the step or piecewise function.

*Problems to try*:

1. Sketch the graph of each function and state its domain and range. Determine the intervals on which the function is increasing, decreasing, or constant.

**Sec 2.3**: Families of Functions, transformations, and Symmetry

* Be able to graph transformations of functions.
* Be able to identify the transformations given the graph.
* Be able to identify they symmetry of a function (even or odd).
* Graph an inequality

*Problems to try*

1. Graph with all important parts (important points, domain, range, increasing, decreasing, list of all transformations, name, and symmetry):
2. Graph with all important parts (important points, domain, range, increasing, decreasing, list of all transformations, name, and symmetry):
3. Determine whether the graph of each function is symmetric with respect to the y-axis or the origin.

**Sec 2.4**: Operations with Functions

* Be able to add, subtract, multiply, and divide functions (that are represented by points or by equations). Be able to find the domain of the final result.
* Be able to find the composition of functions and identify the domain.

*Problems to try*

1. Given and find the following. Be sure to simplify and find the domain of each function.

**Sec 2.5**: Inverse Functions

* Be able to identify functions that are one-to-one functions
* Be able to find the inverse function both graphically and algebraically.
* Identify the domain and range of both the function and the inverse function.

*Problems to try*

13: Determine whether each function is invertible. If the function is invertible, then find the inverse function, and state the domain and range of the inverse function.