

# Exam 2 Review

## Math 1090-008

### Topics to Study

#### **Chapter 2: Functions and Graphs**

- know what independent and dependent variables are
- know how to evaluate a function (at a point or another function)
- know how to find domains and ranges
- know how to test if 2 functions are equal
  - REMEMBER to test domains AND test if  $f(x)=g(x)$
- know how to deal with different kinds of functions
  - polynomial, rational, case-defined, absolute value, factorial
- know how to perform operations on functions
  - add, subtract, multiply, divide, compositions
- know how to find if a function is one-to-one
- Inverse functions
  - what they are
  - how to find one
  - how to check it
  - how to solve equations with it
  - how to graph it
- Graphing
  - how to determine if a graph is a function (vertical line test)
  - how to determine if a graph is one-to-one (horizontal line test)
  - how to graph a function
  - how to find intercepts and zeros
  - how to find domain and range from graph
  - how to translate or reflect a graph (pg 115)

## Chapter 3: Lines, Parabolas, and Systems

- Lines
  - know how to find slope
  - know how to find equation for line
    - \* if given slope and point
    - \* if given 2 points
    - \* if given y-intercept and slope
    - \* if given y-intercept and point
    - \* if given a perpendicular line and point
    - \* if given a parallel line and point
  - know how to write in slope-intercept form
- Quadratic Functions
  - know how to graph
  - know how to find vertex
  - know how to find intercepts
  - how to find maximum and minimum values
- Systems
  - know how to solve 2 and 3 variable systems
  - know how to write down a system given information (ie. story problems)

### How to Study

- REDO and make sure to understand ALL HOMEWORK problems (from homeworks 4, 5 and 6)
- DO the optional problems given on the homeworks
- REDO all the examples given in class
- DO the following review

**Other Review Problems - DON'T ONLY study these!!**

1. Find the domain:  $f(x) = \frac{x}{x^2-6x+5}$

2. If  $f(x) = \frac{7}{x+1}$ , find  $\frac{f(x+h)-f(x)}{h}$

3. If  $f(x) = \sqrt{x+2}$  and  $g(x) = x^3$ , find  $(f \circ g)(x)$  and  $(g \circ f)(x)$

4. Find the inverse, if possible, of  $f(x) = 7x + 6$

5. Give the domain, range, and graph of :

$$h(q) = \begin{cases} q & \text{if } -1 \leq q < 0 \\ 3 - q & \text{if } 0 \leq q < 3 \\ 2q^2 & \text{if } 3 \leq q \leq 5 \end{cases}$$

6. Use the graph of  $\sqrt{x}$  to graph  $y = \sqrt{x-2} - 1$

7. Find the equation for the line that passes through  $(-1,-1)$  and is parallel to  $y = 3x - 4$

8. Find the equation for the line that passes through  $(-6,1)$  and  $(1,4)$

9. Give the intercepts, vertex and graph of:  $h(t) = t^2 - 4t - 5$

10. Solve the following:

$$\begin{cases} 3x + 6y = 9 \\ 4x + 8y = 12 \end{cases}$$

11. Solve the following:

$$\begin{cases} x + 2z = -2 \\ x + y + z = 5 \end{cases}$$