Math 165 Exam 1 Review Guide

Note: This is only a review guide. It is your responsibility to determine the extent of your study resources, which should include the lecture notes and homework problems I assigned from your textbook.

1) Use a graphing calculator to solve the equations below. State the solution. Write your calculator commands and give your window parameters (i.e., the values for Xmin, Xmax, Ymin, and Ymax). Sketch the graph. Solve the equation algebraically.

a) $3(2x-4) = 7-(x+5)$ b) $0.01x + 3.1 = 2.03x - 2.96$

c) $2[m-(4+2m)+3] = 2m+2$ d) $\frac{1}{7}(3k-2) = \frac{1}{5}(k+2)$

2) Use a graphing calculator to find the x-intercept and the y-intercept of the graph given by each equation Write your calculator commands and give your window parameters. Then find the x-intercept and the y-intercept algebraically.

a) $y = 0.0001x - 0.03$ b) $2x + 3y = -6$ c) $4y = -3x$

3) Determine whether the following functions are symmetric about the x-axis, the y-axis, the origin or none of the three.

a) $f(x) = |x| + 3$ b) $g(x) = \frac{1}{x}$ c) $h(x) = -x^3 - 3x^2 + 2$ d) $y = 3x - 9$

4) Determine whether each relation is a function. If the relation is not a function, explain why.

a) Each person is assigned to his/her social security number.

b) Each amount of money is assigned to the object it will buy.

c) Each person is assigned to a person who is older.

d) Each pencil is assigned to its length.

5) Determine the domain of each function. Write your final answer in interval notation.

a) $f(x) = \frac{x-4}{x^2+5x-6}$ b) $g(x) = \sqrt[8]{\frac{x-4}{x+5}}$ c) $h(x) = 9x^2 - 12x + 8$

d) $g(t) = \sqrt[5]{t^2+9t-10}$ e) $f(t) = \frac{t-3}{t^2+10t+25}$

6) Solve each inequality. Write your final answer in interval notation.

a) $x^2 - x - 12 < 0$ b) $2x^2 - 12 \geq -5x$ c) $\frac{5}{x+4} \geq 1$ d) $\frac{2x-1}{3x+4} < 5$

7) Determine the following for (a) $x^2 + 6x + y^2 + 8y + 9 = 0$ (b) $x^2 + 8x + y^2 - 6y + 16 = 0$

i) center *ii*) radius *iii*) vertical vertices *iv*) horizontal vertices *v*) x-intercepts *vi*) y-intercepts

8) Identify the parent/basic function for each of the functions below. State the modifications. Then graph each function and its parent/basic function in the same coordinate system.

a) $g(x) = |x-1| - 4$ b) $F(t) = (t+2)^2$ c) $h(x) = -|x+3| + 1$

9) Be sure to review how to use the Vertical Line Test to determine whether the graph of a relation is the graph of a function.

10) Be sure to review how to determine the domain and range of functions by looking at their graphs.

11) Given the basic/parent function $y = x^3$, determine the modified function that is horizontally shifted 2 units to the left and reflected about the y-axis.