MAT 111 Exam II Spring 2003 Name

Instructions

1. Do all of your work in this booklet. Do not tear off any sheets.
2. **SHOW ALL OF YOUR STEPS** in the problems.
3. Be **clear and neat** in your work. Any illegible work, or scribbling in the margins, will not be graded.
4. Place a **box** around your answers.
5. Place your name on all of the pages.
6. If you need more space, you may use the back of a page, and write **On back of page __** at the top of the page.

Problem 1. **Multiple Guess** (5 pts) In this section, find the answer which best fits the question and write it in the space provided**.**

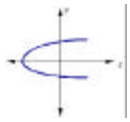
a) Which relation represents a function?

a) {-7,9,1,-4}
b) {(-7,9),(9,-7),(-4,-4)}
c) {(-7,9),(9,1),(-7,-4)}
d) {(-7,9),(1,-4),(1,-7),(-4,1)}
e) none of these

_____

b) Which of the folowing is the graph of a function?

a.  b. 

c.  d. 

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c) What is the domain of the function in the graph below?

a. [-4,5] b. All real numbers. c. (-4,5) d. [-6,3]

_____

d) For what number x is $f(x) = 0$ in the graph below?

a. -3 b. 0 c. 5 d. None of these.

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e) How often doe the line $y = -1$ interect the graph?

a. 0 b. 1 c. 2 d. None of these.

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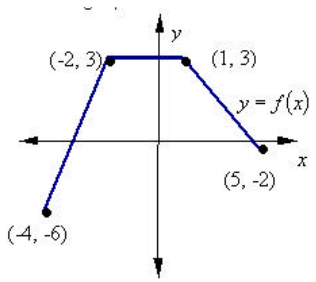
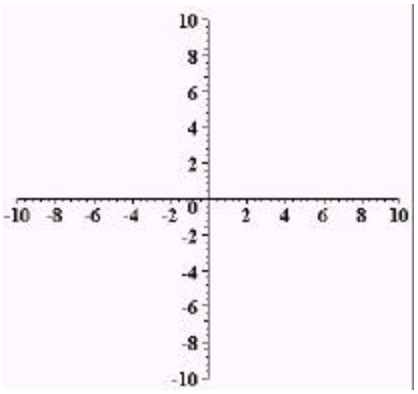


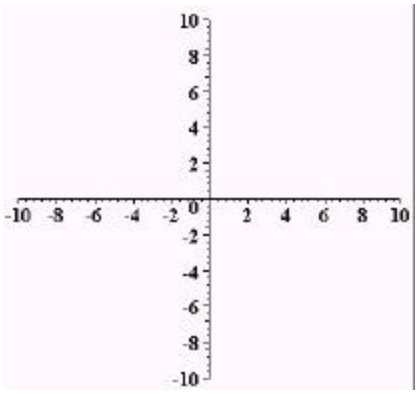
Problem	Score
1 (5 pts)	
2 (20 pts)	
3 (15 pts)	
4 (5 pts)	
5 (15 pts)	
Total (60 pts)	

2. Graphing (20 pts) Graph the following functions making sure that you have found and labeled all appropriate features: intercepts, vertex, axis of symmetry, etc. Be Neat!

a. $h(x) = \frac{2}{3}x - 4$. .



c. $f(x) = -x^2 + 4x + 5$.



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3. Quadratic Functions (15 pts)

a. Consider the function $f(x) = 3x^2 - 12x - 4$

i. Does this function have a minium or a maximum value? Why?

ii. Find that value.

b. A gardner has 100 feet of fencing for a small rectangular garden on the side of his house. Assume the house is along the length of the garden so that only three sides need to be fenced.

i. Sketch the garden area and label needed features.

ii. Express the area as a function of the width of the garden.

iii. What is the maximum area that can be enclosed?

3. Functions (5 pts)

a. State the domain and range for

i. $g(z) = 3z + 2$.

Domain _____

Range _____

ii. $f(x) = \sqrt{1-2x}$.

Domain _____

Range _____

b. Evaluate $f(3)$ for $f(x) = \dfrac{x^2 - 4}{x^2}$

3. Data Analysis (15 pts) Consider the folowing data which possibly relates high school and college GPAs.

x (HS GPA)	G (College GPA)
2.73	2.43
2.92	2.97
3.45	3.63
3.78	3.81
2.56	2.83
2.98	2.81
3.67	3.45
3.1	2.93

a. Does the relation defined by the set of ordered pairs (x,G) define a function?

b. Determine the line of best fit relating these GPAs and express this relationship in the form $G(x) = mx + b$ using no more than three or four digits.

c. Is this a good linear fit?

d. What is the meaning slope in words (in terms of grades).

e. Predict a student's college GPA if her high school GPA is 3.23.