

Math 1210 College Algebra I
Exam Two: Sections 1.3, 1.4, R.4 and R.5
Tuesday, February 22, 2011

Name: _____

Instructor: _____ ClassTime _____

- If your instructor is not standing in the room you are in the wrong room. Talk to an instructor and they will direct you to the correct room.
- Make sure all cells phones, ipods, mp3 players and other electronic devices are turned off and put away. The only items that should be on your desk are your calculator, test paper and writing implement.
- Turn your hat around.
- Put your closed book bag and calculator cover under your seat.
- Once you have started the exam you may not leave the room until you are finished with your exam and have turned it in.
- We cannot answer questions about how to do a problem or using the calculator. We will answer questions that are for clarification of what is being asked or strange error messages on the calculator.
- You should have 4 different pieces of paper. The first 3 printed on the front and back. The last page printed only on the front. If you need extra room for a problem, use the back of the last page.
- When you are finished, make sure you turn your test into YOUR instructor and you are free to leave.
- **Show all work** to receive credit for each of the problems. A problem worth more than 2 points with the correct answer and no work, will receive **NO CREDIT**.
- Incorrect answers with incorrect work shown or no work shown will NOT receive any credit.
- **Circle your answers** and when appropriate **label** them.
- Give answers to written questions in **complete sentences**.

Data for the BGSU Women's Basketball team can be found at:
<http://bgsufalcons.com/custompages/stats/wbasketball/2011/HTML/teamstat.htm>

1. (2 pts each) For each function below determine if the function is:

A) Linear but not constant

B) Linear and constant

C) Constant but not linear

D) Not Linear

(Put the correct letter on the line beside the function.)

a. $f(x) = |x + 3|$ _____ b. $f(x) = -5$ _____ c. $f(x) = 3x - 2$ _____

2. Carrie purchased the Silver meal plan at BGSU. She found the function $M(x) = 1755 - 15.67x$ models the amount of money she has left after x days.

a. (2 pts) Calculate $M(21)$

b. (2 pts) Interpret the results of question **a** in context of the problem.

c. (2 pts) Interpret the slope as a rate of change in context of the problem.

3. (3 pts) Fill in the blanks with the best word from the list at the left.

graph

range

A function is a _____ in which each element in the

relation

vertical line

_____ corresponds to exactly one element in the _____.

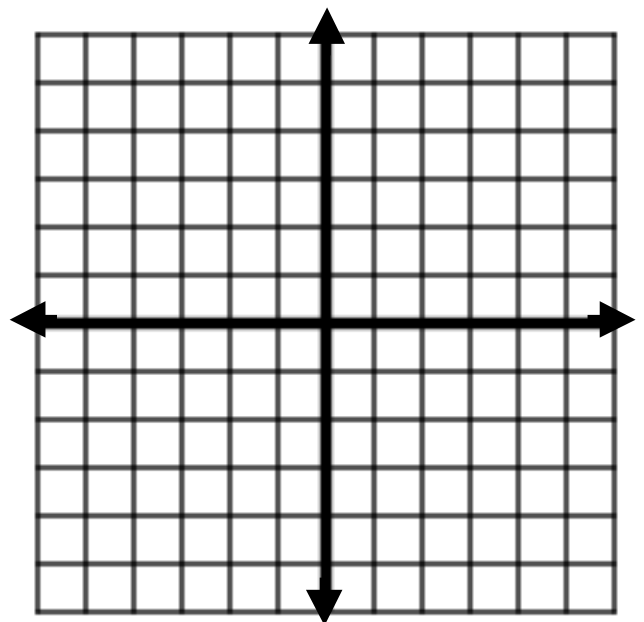
domain

point

4. (2 pts) Simplify the expression $\frac{-5x^{2/9}}{x^{5/6}}$. Assume that all variables are positive. Write answer without negative exponents.

5. (2 pts each) For each statement below fill in the blank with the correct answer.
- The numerical value of the slope of the function $g(x) = 2 - 4x$ is _____ .
 - The numerical value of the slope of a constant function is _____ .
 - If $f(x) = -3$, then $f(4) =$ _____ .
 - The domain of the function $h(x) = \sqrt{x - 4}$ is _____ .
 - If $f(30) = -4$ then the point _____ is on the graph of $f(x)$.
6. (4 pts) If possible, find the slope of the line passing through the points $(2, -4)$ and $(-2, 8)$.
7. Let $f(x) = x^2 - 9$.
- (2 pts) Evaluate $f(-5)$.
 - (3 pts) Simplify $f(2a)$.
 - (4 pts) Determine a numerical representation of $f(x)$ using a table with $x = -5, -3, 0, 3, 5$.

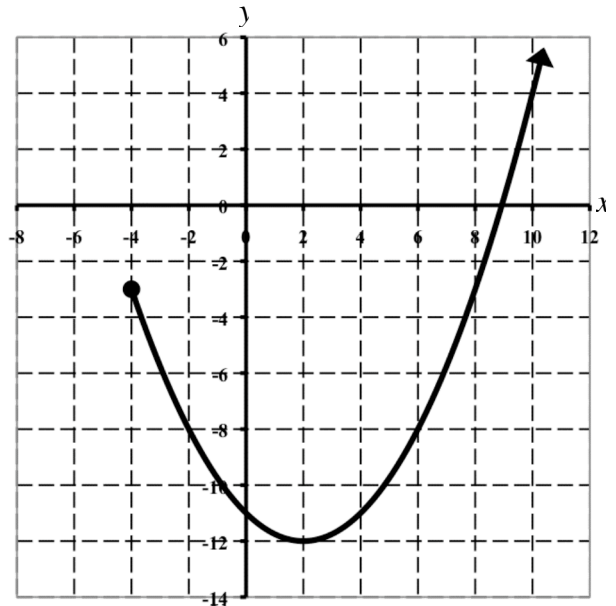
- d. (5 pts) Determine the graphical representation of $f(x)$. Use the grid on the right. Make sure to include at least 3 points on the graph and capture the basic shape. We will assume that x -scale and y -scales are 1 unless stated otherwise.



8. (4 pts) Lauren Prochaska recently broke the all-time scoring record for the BGSU Women’s Basketball Team. Below shows how many points she had scored for the season for the given number of games. Could this data be modeled exactly by a linear function? **Show your work and explain your answer.**

Number of Games Played	3	6	8	10	17
Number of Points Scored	62	122	162	201	336

9. Use the graph of the function $g(x)$ at the right to answer the following questions.



- a. (4 pts) Evaluate $g(2)$ and $g(10)$.

$g(2) =$ _____

$g(10) =$ _____

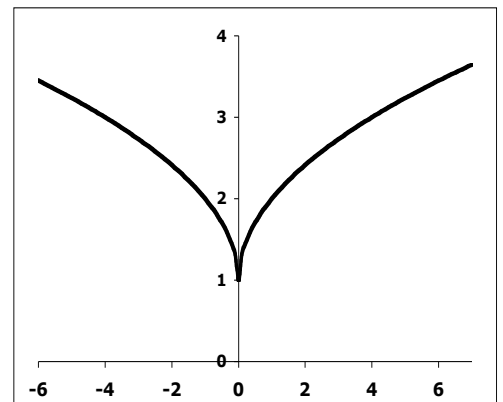
- b. (2 pts each) From the list below, indicate the interval that gives the domain and range.

Domain: _____

Range: _____

- | | | |
|------------------------------|-----------------------|----------------------|
| A) $\{x -2 \leq x \leq 12\}$ | D) $\{x x \geq -12\}$ | G) $\{y y \geq -4\}$ |
| B) $\{x -8 \leq x \leq 12\}$ | E) $\{y y \geq -12\}$ | H) $\{x x \geq -4\}$ |
| C) $\{y -14 \leq y \leq 6\}$ | F) All Real Numbers | I) $\{y y \leq -3\}$ |

10. (3 pts) Does the graph at the right represent a function? **Explain your answer.**



11. (2 pts) Factor $12x^3y - 4x^2y + 4xy$ completely.
12. (4 pts) Factor $x^3 - 3x^2 + x - 3$ completely.
13. (4 pts) Factor $x^4 - 16$ completely.
14. (4 pts) Factor $40 - 22x - 6x^2$ completely. You must check your answer to get full credit for the problem.
15. (2 pts) Find the least common multiple of $x^4(x + 3)$ and $(x - 4)(x + 3)^2$.

16. (4 pts) Simplify the expression $\frac{x^2 + 2x - 15}{9 - x^2}$.

17. (5 pts) Subtract and simplify $\frac{x^2 - 23}{x - 5} - \frac{x - 3}{x - 5}$.

18. (5 pts) Add and simplify $\frac{x}{(x + 3)} + \frac{1}{(x + 1)}$.

19. (5 pts) Divide and simplify $\frac{x^2 + x - 6}{(x + 3)(2x + 5)} \div \frac{2x^2 - 9x + 10}{6x + 15}$.

20. (5 pts) Simplify the expression $\frac{\frac{3}{x+2} + \frac{x}{x+2}}{\frac{5}{x+2} + \frac{2}{x}}$.