

Combined Math 99 Midterm

Name _____

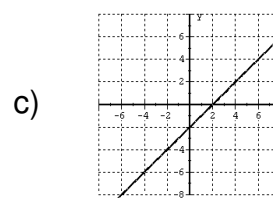
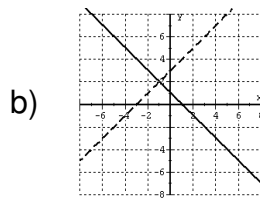
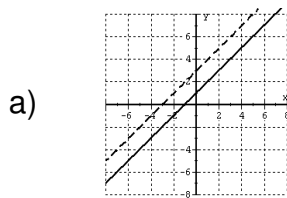
Version 4 - Practice

Directions: You must show all work except on multiple choice questions.

Multiple Choice: Problems 1 - 7

(2 pts each)

- Express the solution to the compound inequality $x < -2$ OR $x \geq 1$ in interval notation.
a) $(-2, 1]$ b) $(-\infty, \infty)$ c) $(-\infty, -2)$ d) $[1, \infty)$
e) $(-\infty, -2) \cup [1, \infty)$
- Express the solution to the compound inequality $x > 4$ AND $x \geq 2$ in interval notation.
a) $[2, 4)$ b) $(4, \infty)$ c) $(-\infty, 2]$ d) $(-\infty, 2] \cup (4, \infty)$ e) none of these
- Let g be the function $g = \{(-2, 2), (-1, 1), (0, 3), (1, 1), (2, 4)\}$. Then the range of g is:
a) $\{1, 2, 3, 4\}$ b) $\{-2, -1, 0, 1, 2\}$ c) $[-2, 2]$ d) $[1, 4]$ e) none of these
- Which of the following graphs would represent an independent and consistent system of equations?

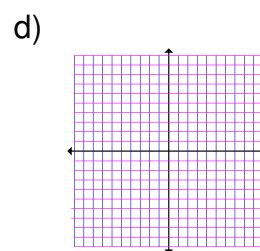
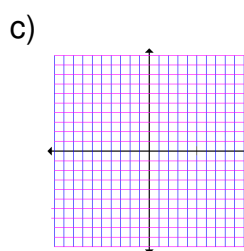
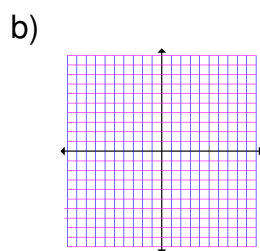
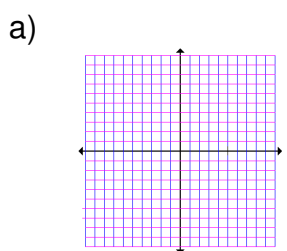


d) all of these

- Without solving, determine how many solutions there are for the following system of equations:

$$y = .471x - .471$$
$$y = .471x + .471$$

- a) none b) 1 c) infinite number d) 2 e) can't tell
- Let g be the function $g = \{(2, 5), (3, 4), (4, 6), (5, 4), (6, 7)\}$. Then $g(6) =$
a) 4 b) 5 c) 7 d) $g(6)$ is undefined e) $\{2, 3, 4, 5, 6\}$
- Which of the following is the graph of a function:



Show all your work.

8. Solve for x : $|3x - 5| = |x - 4|$

3 pts

9. Solve for x : Express your answer in interval notation

$|5x - 2| \leq 4$

3 pts

10. Solve for x : Express your answer in interval notation

$|3 - 2x| > 7$

3 pts

11. Solve for x : Express your answer in interval notation.

8 pts

a) $|4x - 5| \leq -1$ _____

b) $|4x - 5| = -2$ _____

c) $|4x - 5| > -1$ _____

d) $|4x - 5| > 0$ _____

12. Let $f(x) = -x^2 + 2x + 1$. Completely simplify each answer.

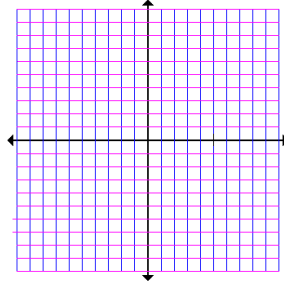
4 pts

a) $f(-1) =$

b) $f(x+h) - f(x) =$

13. The function f is graphed on the right.

5 pts

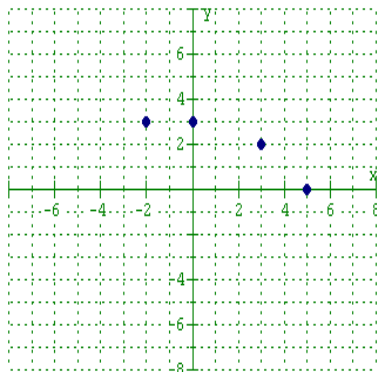


a) What is the domain of f ?

b) What is the range of f ?

c) What is the argument(s) for the image 0?

14. Let $g = \{(-1, 2), (0, 1), (1, 0), (2, -1)\}$; $m(x) = 1 - x^2$; $h(x)$ is represented by the graph shown below. 6 pts



Find each of the following:

a) $g(2)$

b) $m(-1)$

c) $h(0)$

15. Solve the following systems for (x, y) :

4 pts

a)
$$\begin{aligned} 3x + 6y &= 9 \\ 4x + 8y &= 16 \end{aligned}$$

b)
$$\begin{aligned} \frac{1}{4}x - 2y &= 1 \\ x - 8y &= 4 \end{aligned}$$

16. Solve the system for (x, y, z) :

4 pts

$$\begin{aligned} 7x + 4y &= 10 \\ x - 4y + 2z &= 6 \\ y - 2z &= -1 \end{aligned}$$

17. Use matrices and row operations to solve this linear system. No credit will be given for any other method. Express the solution as an ordered triple. 5 pts

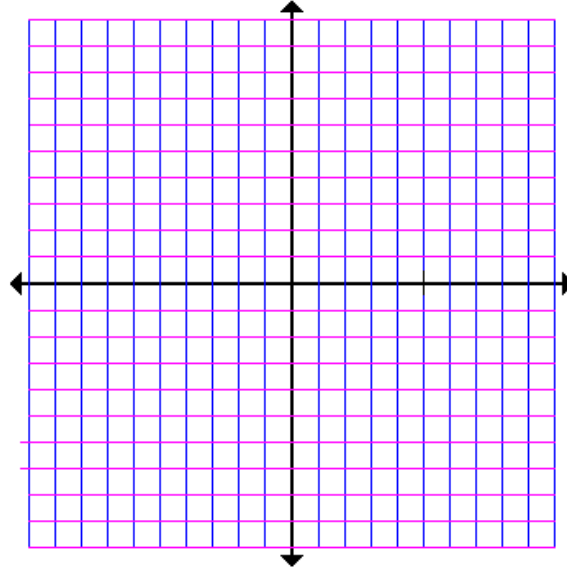
$$\begin{array}{rclcrcl} 4x & + & y & + & z & = & 3 \\ -x & + & y & - & 2z & = & -11 \\ x & + & 2y & + & 2z & = & -1 \end{array}$$

18. A family takes a 10 mile canoe trip down a river in $1\frac{1}{4}$ hours. After lunch, it takes them 4 hours to return. Find the rate of the current and rate that the family can row in still water.
4 pts
19. A charity fundraiser consisted of a spaghetti supper where a total of 387 people were fed. They charged \$6.80 for adults and half-price for children. If they took in \$2444.60, find how many adults and children attended the supper. 4 pts

20. Graph the solutions of the system of linear inequalities:

4 pts

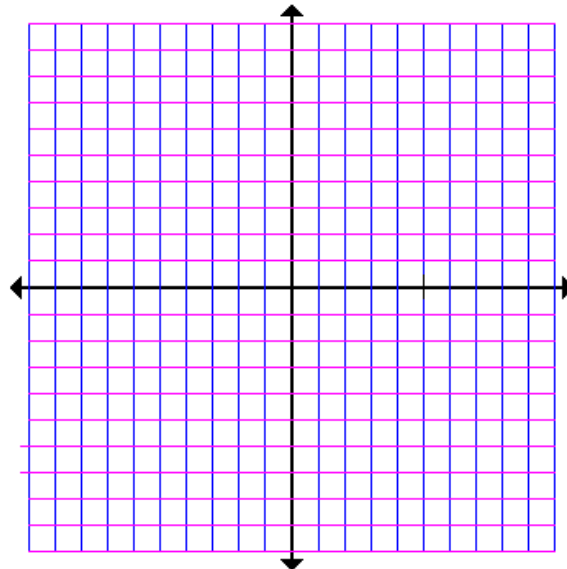
$$\begin{cases} y + 2x \geq 0 \\ 5x - 3y \leq 12 \\ y \leq 2 \end{cases}$$



21. Let $f(x) = -\sqrt{x-5} + 1$
List the transformations being applied and graph $f(x)$.

4 pts

Transformations:



22. Solve for x : $\frac{3}{x+3} = \frac{5}{x^2-9} - \frac{2}{x-3}$ 4 pts

23. Perform the addition and subtraction: 3 pts

$$\frac{3}{x+3} - \frac{5}{x^2-9} + \frac{2}{x-3}$$

24. Simplify and reduce completely: $\frac{4x^3 - 2x^2}{x^{-3} - 2x^{-2}}$ 4 pts

25. In 2 minutes, a conveyor belt moves 300 pounds of aluminum from a delivery truck to a storage area. If the belt works together with a smaller belt and together they complete the job in $1\frac{1}{2}$ minutes, find how long it would take the smaller belt to do the job on its own?
4 pts
26. The Pool Fun Company has learned that, by pricing a newly released Fun Noodle at \$3, sales will reach 10,000 Fun Noodles per day during the summer. Raising the price to \$5 will cause the sales to fall to 8000 Fun Noodles per day. Let x be price and y be the number sold.
- a) Find and interpret the slope 2 pts
- b) Write the equation describing the relationship between sales price and number of Fun Noodles. 2 pts
- c) Find and interpret the y -intercept. 2 pts
- d) Find and interpret the x -intercept. 2 pts
- e) Use the equation found in part b) to predict the daily sales of Fun Noodles if the price is \$3.50. 2 pts