

MTH 65 – Winter Term 2010  
Test 1 – Given January 20

Name \_\_\_\_\_

<b>You may not use any sort of calculator on this portion of the test.</b>
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**Directions for Problem Set 1 of the test**

Solve each system of equations using the method specified in the problem. To earn full credit for any given problem you need to show steps and organize your work reasonably close to the manner in which examples were done and discussed during lecture. Don't forget to state conclusions using complete sentences! Do not state any decimal solutions. (44 points total)

1. Solve  $\begin{cases} 2x - y = 3 \\ 5x - 2y = 10 \end{cases}$  using the *substitution method*.

2. Solve  $\begin{cases} 3x + 3y = 4 \\ y = -x + 4 \end{cases}$  using the *substitution method*.

3. Solve  $\begin{cases} 3x + y = 7 \\ 2x - 5y = -1 \end{cases}$  using the *addition (elimination) method*.

4. Solve  $\begin{cases} x + y = 11 \\ \frac{x}{5} + \frac{y}{7} = 1 \end{cases}$  using the *addition (elimination) method*.

5. State the solution to  $\begin{cases} y = \frac{x}{3} - 5 \\ x + 2y = 0 \end{cases}$  after first graphing the lines that correspond to the two equations onto Figure 1.

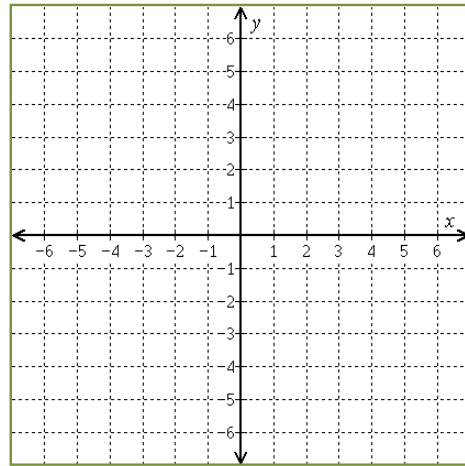


Figure 1:

**Directions for Problem Set 2 of the test**

For each system write a sentence or two that describes the system. Your sentence(s) should include the word “consistent” or the word “inconsistent” and should also include the word “dependent” or the word “independent.” (6 points total)

**Please note, I am not asking you to find and state the solution to the system.**

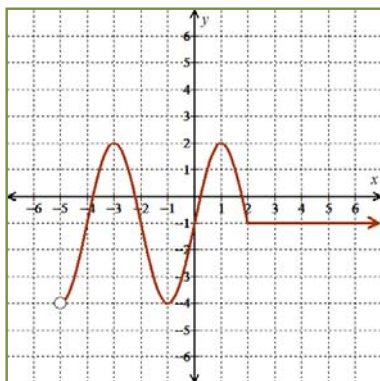
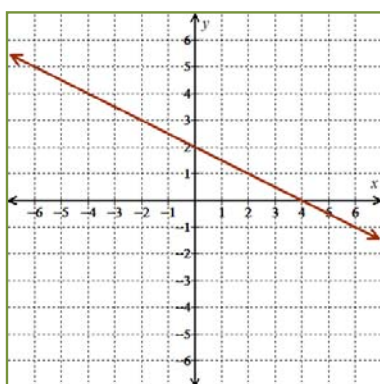
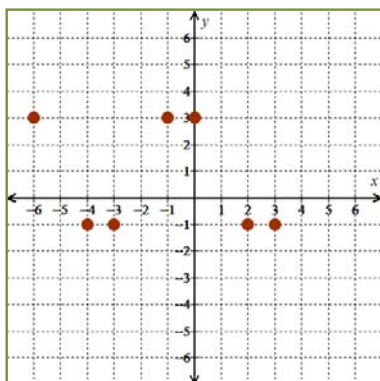
1.  $\begin{cases} y = -x + 3 \\ x + y = 3 \end{cases}$

2.  $\begin{cases} y = -7x - 1 \\ y = -3x + 2 \end{cases}$

**Directions for Problem Set 3 of the test**

State each answer using formats consistent with that illustrated and discussed in class.

1. State the domain and range for the functions shown in figures 2-4. (12 points total)

**Figure 2:**  $f$ **Figure 3:**  $g$ **Figure 4:**  $k$

2. Answer each of the following questions about the function  $w$  shown in Figure 4. (10 points total)

a. What is the function value at 2?

b. What are the solutions to the equation  $w(x) = 0$ ?

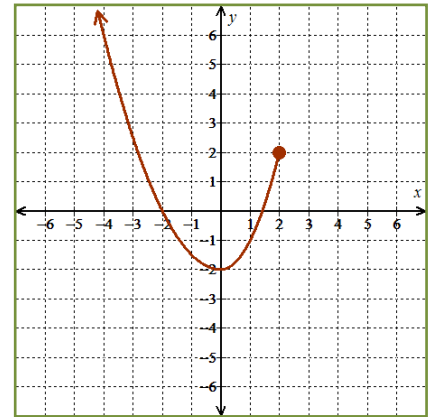


Figure 4:  $w$

c. What is the value of  $w(-1)$ ?

3. Find the value of  $f(3)$  if  $f(x) = -x^2 - |x|$ . (4 points)

4. Find the solution to the equation  $g(x) = 7$  if  $g(x) = 3 - \frac{x}{4}$ . (4 points)

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**You may use your calculator on this portion of the test.**

**Directions for Problem Set 4 of the test**

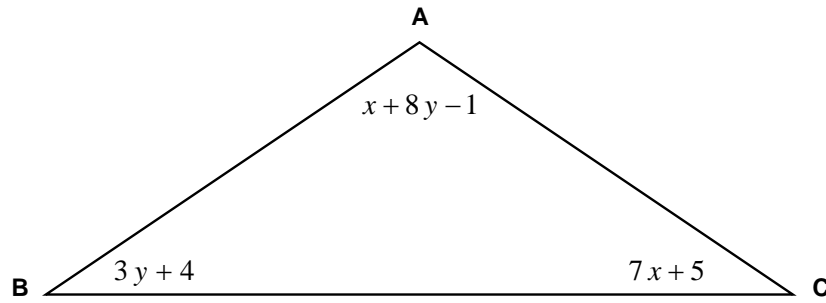
Find the solution to each word problem. To earn full credit for each problem you must:

- Clearly define two variables (for problem 1 only ... the variables are given in problem 2)
  - Use your two variables to come up with two equations that model the problem.
  - Solve the resultant system of equations using the method of your choice.
  - State a contextual conclusion using a complete sentence.
1. Nutritional information for macaroni and broccoli is given in Table 1. How many servings of each would it take to get exactly 15 grams of protein and 50 grams of carbohydrates? (10 points)

**Table 1:** Nutritional Data

	Macaroni	Broccoli
Protein (grams/serving)	3	2
Carbs (grams/serving)	16	4

2. In Figure 1 an isosceles triangle in which angles **B** and **C** have the same measure is shown. Find the values of  $x$  and  $y$  and use those to determine the measure of each angle in the triangle. (10 points)



**Figure 1:** Isosceles Triangle