

**Math 203: College Algebra**  
**Spring 2010**  
**Practice Test 1**

Name: \_\_\_\_\_

*For problems 1 and 2, evaluate  $f(-2)$ ,  $f(-2x)$ , and  $f(3x - 1)$  for each function.*

1.  $f(x) = 7x + 10$

2.  $f(x) = x^2 + 1$

3. Find the domain of  $f(x) = \frac{1}{x-2}$ . Express your answer in interval notation.

*For problems 4 and 5, graph the function and determine the domain and range. Express in interval notation.*

4.  $f(x) = 2|x + 1|$

5.  $f(x) = -\sqrt{x + 1}$

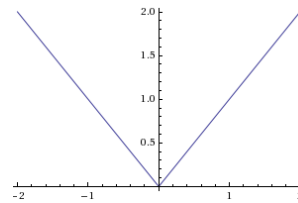
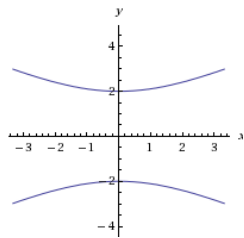
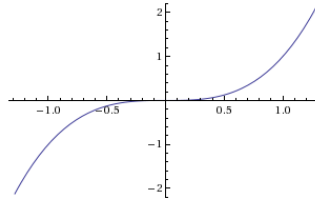
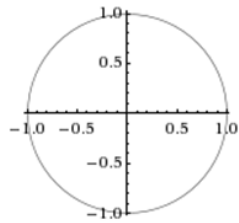
6. Do the following sets of points define a function? Why or why not?

a.  $\{(-1, 0), (-2, 0), (-3, 0), (-4, 0)\}$

b.  $\{(0, -1), (0, -2), (0, -3), (0, -4), (0, -5)\}$

c.  $\{(1, 1), (2, 2), (3, 3), (4, 4)\}$

7. Determine which of the following are graphs of functions. Explain how you know.



8. Find an equation of the line with a slope of -2 and passing through the point  $(-1, 1)$ . Write the equation in slope-intercept form. Plot the line.

9. Find an equation of the line passing through (1, 3) and (2, 7). Write the equation in slope-intercept form. Plot the line.

10. A monthly cell-phone bill is \$4.50 plus \$0.07 for each minute of use.

a. Express the amount of the long-distance bill as a linear function of  $x$ , the number of minutes of use.

b. What the  $y$ -intercept represent in the problem?

10. Find the point of intersection for the following lines both algebraically and graphically.

$$y = -\frac{1}{2}x + 1; y = \frac{1}{4}x + 2$$

For problems 11-13, solve the inequality. Express your answer in interval notation.

11.  $3x + 1 \leq 7$

12.  $-\frac{x}{2} > 4(1 - x)$

13.  $-1 < -2x + 1 \leq 5$

14. The production cost for manufacturing  $q$  units of a product is  $C(q) = 10,000 + 15q$ . The revenue function is  $R(q) = 20q$ . How many units must be sold to break even?