

College Algebra Spring 2013  
 Chapters 1 and 2. Practice Test

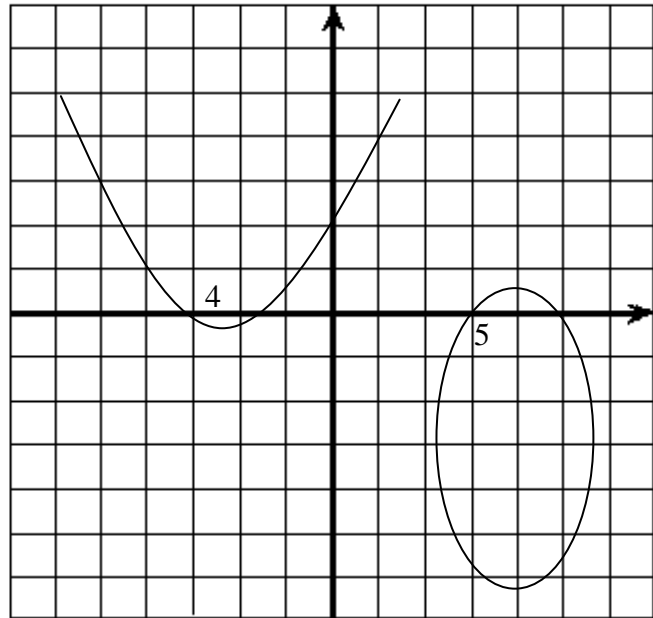
**NON-CALCULATOR:**

**I. Decide whether or not the following information defines a function. Explain/support your answer.**

1.  $\{(-6,2), (-3, -5), (4, -7), (8, -6)\}$
2.  $\{(-9,9), (-9,2), (2,3), (3,8), (10, -8)\}$
- 3.

x	-1	0	1	2	3
y	5	7	2	-1	-8

4 & 5. Refer to the numbered graphs



6.

x	-3	2	0	3	2
y	12	-3	5	16	4

**II. Find/state the x- and y-intercepts of the graph of the given equation. Then graph the equation.**

7.  $2x - 4y = 4$

**III. Find/state the slope of the line and the y-intercept.**

8.  $4x - 8y = -16$

**IV. Find the slope of the line passing through the two points.**

9.  $(-1, -4)$  and  $(6, 9)$

**V. Find the slope-intercept form for the line that satisfies the stated conditions.**

10. Perpendicular to  $y = \frac{4}{5}(x - 7) + 7$ , passing through  $(8, -1)$

11. Parallel to  $y = -3x + 8$ , passing through  $(-4, 11)$

**VI. Given the points  $(1, 9)$  and  $(1, 1)$  find the following.**

12. The slope of the line passing through the two points.

13. The equation of the line passing through the two points.

**College Algebra Spring 2013  
Chapters 1 and 2. Practice Test**

**VII. Solve the problem.**

14. An electrician charges a fee of \$60 plus \$45 per hour. Let  $y$  be the cost in dollars of using the electrician for  $x$  hours.
- Write a linear equation that describes the scenario above.
  - Find and interpret the rate of change.
  - Identify and interpret the  $y$ -intercept in terms of the problem.
  - If the total bill is \$195. How many hours were billed by the electrician?

**VIII. Solve the system of equations using the method listed. Identify whether the system is consistent or inconsistent and dependent or independent.**

15. Elimination Method: 
$$\begin{aligned} -5x + 7y &= -40 \\ -2x + 4y &= -16 \end{aligned}$$

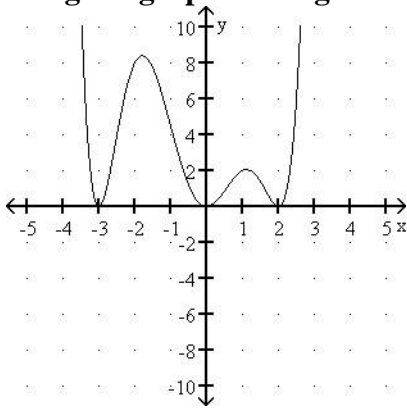
16. Substitution Method: 
$$\begin{aligned} 3x + y &= 10 \\ 6x + 2y &= 20 \end{aligned}$$

**IX. State the Domain and Range of Each Function. Write your answer in interval notation.**

17.  $f(x) = \frac{2x+1}{3x-5}$

18.  $f(x) = \sqrt{x-4}$

**X. Using the graph of the given function, identify the following.**



19. a)  $f(-2) =$                       b)  $f(1) =$
20. Find  $x$ -values where  $f(x) = 0$

**CALCULATOR ALLOWED:**

**I. Find the slope-intercept form of the line passing through these points.**

21.  $(-6, -7)$  and  $(1, -1)$

**II. Solve the following problems.**

22. Using a phone card to make a long distance call costs a flat fee of \$0.54 plus \$0.23 per minute starting with the first minute.
- Write the linear equation that represents the cost per call.
  - Find the total cost of a phone call which lasts 21 minutes.
  - How long was the call if the cost was \$3.99?

**College Algebra Spring 2013**  
**Chapters 1 and 2. Practice Test**

23. A manufacturer has total revenue given by the function  $R(x) = 280x$  and has total cost given by  $C(x) = 69x + 297,000$ ; where  $x$  is the number of units produced and sold. Find the number of units where the product breaks even.
24. The demand for a certain product is given by  $p + 5q = 328$ , and the supply is given by  $p - 7q = 28$ , where  $p$  is the price in dollars and  $q$  is the quantity demanded or supplied at price  $p$ . Find the price and quantity at which market equilibrium occurs.
25. Given the following revenue and cost functions:  $R(x) = 78x - 2x^2$  and  $C(x) = 22x + 106$ , where  $x$  is the number of units.
- Find  $P(x)$  and simplify it.
  - Find the profit at 20 units.

**III. For the following problems, solve by:**

- Assign variables to the unknowns**
- Write a system of equations**
- Solve the system, you must show some work**
- Write the solution in terms of the problem**

26. Jim wants to plan a meal with 66 grams of carbohydrates and 1040 calories. If green beans have 7 grams of carbohydrates and 30 calories per half-cup serving and French fried shrimp have 9 grams of carbohydrates and 190 calories per three-ounce serving, how many servings of green beans and shrimp should he use?
27. Nadine sold two kinds of tickets to her class play. Student tickets cost \$4.00 each, and adult tickets cost \$6.50 each. If Nadine sold a total of 35 tickets for \$182.50, how many student and adult tickets did she sell?

**IV. Graph the solution.**

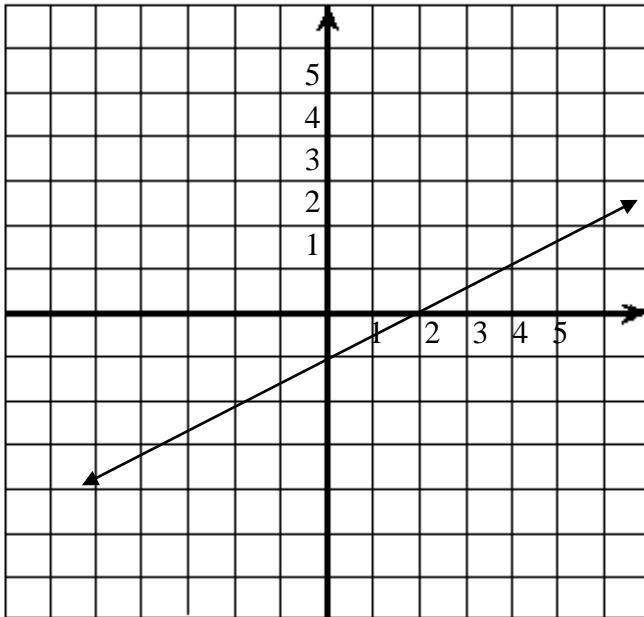
28.  $x + y \leq 2$
29.  $2x + 3y > 6$   
 $x - y \leq 3$
30. A rental agency has a maximum of \$1,260,000 to invest in the purchase of at most 71 new cars of two different types, compact and midsize. The cost per compact car is \$15,000 and the cost per midsize car is \$28,000.
- Assign variables to the unknowns
  - Write a system of inequalities
  - Graph the system using your calculator
  - Sketch the graph with shading and identify the corner points/intersection points

College Algebra Spring 2013  
 Chapters 1 and 2. Practice Test

Answers:

Non-Calculator:

1. Function, each input has exactly one output.
2. Not a Function, the input  $-9$  produces two different outcomes.
3. Function, each input has exactly one output.
4. Function, it passes the vertical line test.
5. Not a Function, it fails the vertical line test.
6. Not a Function, the input 2 produces two different outcomes.
7.  $x$  - intercept =  $(2,0)$ ;  $y$  - intercept =  $(0,-1)$



8.  $m = \frac{1}{2}$ ,  $y$  - intercept =  $(0,2)$
9.  $m = \frac{13}{7}$
10.  $y = \frac{-5}{4}x + 9$
11.  $y = -3x - 1$
12. slope is undefined
13.  $x = 1$
14. a)  $y = 45x + 60$   
 b) The rate of change is \$45 per hour.  
 c) The y-intercept is \$60 which is the initial service fee.  
 d) 3 hours.
15.  $(8,0)$ , consistent, independent
16. Infinitely many solutions, consistent, dependent
17.  $(-\infty, \frac{5}{3}) \cup (\frac{5}{3}, \infty)$
18.  $[4, \infty)$
19. a) 8            b) 2
20.  $x = -3, x = 0, x = 2$

**College Algebra Spring 2013**  
**Chapters 1 and 2. Practice Test**

**Calculator Allowed:**

21.  $y = \frac{6}{7}x - \frac{13}{7}$

22. a)  $y = 0.23x + 0.54$       b) A 21 minute call would cost \$5.37

c) A call costing \$3.99 lasted 15 minutes.

23. To break even they need to sell 1408 units.

24. For market equilibrium we need 25 units at a price of \$203.

25. a)  $P(x) = -2x^2 + 56x - 106$     b)  $P(20) = 214$

26. a)  $x = \#$  of servings of green beans,  $y = \#$  of servings of shrimp

$7x + 9y = 66$

b)  $30x + 190y = 1040$

c) (3,5)

d) You need 3 servings of green beans and 5 servings of shrimp.

27. a)  $x = \#$  of student tickets,  $y = \#$  of adult tickets

$x + y = 35$

b)  $4x + 6.5y = 182.50$

c) (18,17)

d) She sold 18 student tickets and 17 adult tickets.

28. & 29. Check using your calculator.

30. a) Let  $x$  represent the number of compact cars and  $y$  represent the number of midsize cars.

$x + y \leq 71$

b)  $15,000x + 28,000y \leq 1,260,000$

d) Corner points/intersection points are (0,45), (56,15), (71,0), (0,0)