

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

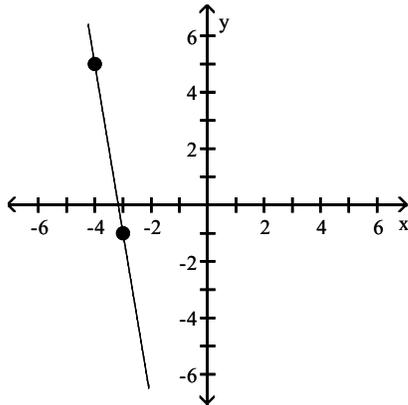
**Determine whether the equation defines y as a function of x.**

- |                           |                   |          |
|---------------------------|-------------------|----------|
| 1) $y = x^3$              |                   | 1) _____ |
| A) function               | B) not a function |          |
| 2) $y^2 = 5 - x^2$        |                   | 2) _____ |
| A) function               | B) not a function |          |
| 3) $y = \pm\sqrt{1 - 9x}$ |                   | 3) _____ |
| A) function               | B) not a function |          |
| 4) $y = 3x^2 - 9x + 6$    |                   | 4) _____ |
| A) function               | B) not a function |          |

**SHORT ANSWER.** Write the word or phrase that best completes each statement or answers the question.

Find the equation of the line through the points  $(-4, 5)$  and  $(-3, -1)$  in slope intercept form.  $f(x) =$  \_\_\_\_\_.  
 What is the slope  $m$  and  $y$  intercept?

- 5) \_\_\_\_\_



- 6) A car rental charge is \$100 per day plus \$0.30 per mile travelled. Determine the equation of the line that represents the daily cost by the number of miles travelled and graph it. If a total of 300 miles was travelled in one day, how much is the rental company going to receive as a payment? 6) \_\_\_\_\_

$C(x) =$  \_\_\_\_\_

- 7) A phone company has a monthly cellular data plan where a customer pays a flat monthly fee of \$10 and then a certain amount of money per megabyte (MB) of data used on the phone. If a customer uses 20 MB, the monthly cost will be \$11.20. If the customer uses 130 MB, the monthly cost will be \$17.80. Find a linear equation that computes the cost versus  $x$ , the number of MB used that month. Use your equation to find the total monthly cost if 250 MB are used. 7) \_\_\_\_\_

$C(x) =$  \_\_\_\_\_ Monthly Total Cost for 250 MB \$ \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

- 8) An isotope of carbon (C-14) is said to be radioactive, i.e. it spontaneously “degrades” into something else in a way that its amount (mass/number/volume/activity) is halved after every fixed interval of 5,730 years. A living body should contain, say  $M_0$  kg of C-14. Upon death, after 5,730 years, the body will be left with  $0.5 M_0$  kg of C-14. Another 5,730 years later, there is  $0.25 M_0$  kg left of C-14. If  $M$  is the mass variable of the radioactive mass at any time  $t$ . The variable  $M$  versus  $t$  is what kind of function? 8) \_\_\_\_\_

- A) Linear                      B) Quadratic                      C) Exponential                      D) Suspenseful

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

**Find the vertex, axis of symmetry, and the y intercept of the graph of the function. Does the graph open up or down?**

9)  $f(x) = -3x^2 + 12x$  9) \_\_\_\_\_

10)  $f(x) = x^2 - 13x - 8$  10) \_\_\_\_\_

**Solve the problem.**

- 11) Dr. Brown designed a rocket with a warp drive to overcome gravity and allow the rocket to travel beyond the Earth into the solar system. The height of the rocket in feet after  $t$  seconds is given by 11) \_\_\_\_\_

$h = 32t^2 + 1000t + 500$ . In just 100 seconds, how high is the rocket? \_\_\_\_\_ feet

**Determine, without graphing, whether the given quadratic function has a maximum value or a minimum value and then find that value.**

12)  $f(x) = -11x^2 - 2x - 7$  12) \_\_\_\_\_

13) Find the zeros of the function  $h(x) = x^2 - 11x + 28$  13) \_\_\_\_\_

14) Find the zeros of the function  $g(x) = x^2 + 4x - 165$  14) \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

15) Determine what kind of change is represented by the function below .

15) \_\_\_\_\_

$$y = .001 (1.08)^x$$

A) Linear Growth

B) Linear Decline

C) Exponential Decay

D) Exponential Growth

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

16) The value of a brand new video game depreactites 30% per year. How much will a \$200 video game be worth in 5 years. Round to nearest cent.

16) \_\_\_\_\_

17) In California home values increased rapidly at about 15% per year. In 20 years, how much would a \$100,000 home be worth? Round to nearest dollar.

17) \_\_\_\_\_

Answer Key

Testname: MATH 1001 TEST 3 PRACTICE

- 1) A
- 2) B
- 3) B
- 4) A
- 5)  $f(x) = -6x - 19$
- 6)  $C(x) = .3x + 100$ , \$190.00
- 7)  $C(x) = .06x + 10$ , \$25.00
- 8) C
- 9)  $(2, 12)$ ;  $x = 2$ ,  $(0,0)$  , Down
- 10)  $\left(\frac{13}{2}, -\frac{201}{4}\right)$ ;  $x = \frac{13}{2}$ ,  $(0, -8)$  , Up
- 11) 420,500 feet
- 12) maximum;  $-\frac{76}{11}$
- 13) 4, 11
- 14) 11, -15
- 15) D
- 16) \$33.61
- 17) \$1,636,654