

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

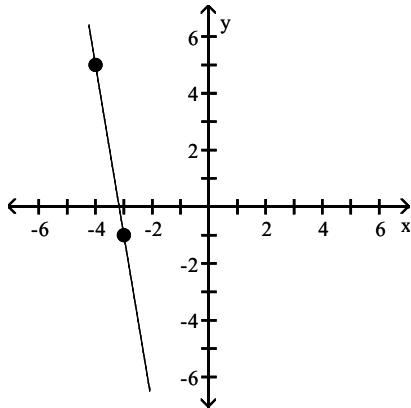
Determine whether the equation defines y as a function of x.

- | | | |
|---------------------------|-------------------|----------|
| 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 \$ _____

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- 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