

# Math 100

## Practice Test #1

Spring 2024

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

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

1)  $2.59 \times 10^{-6}$  written in decimal notation is:

- A) None of these      B) 0.0259      C) 0.0000259      D) 0.00259      E) 0.00000259

2) 6,700,000 written in scientific notation is:

- A)  $6.7 \times 10^{-7}$       B)  $6.7 \times 10^7$       C)  $6.7 \times 10^{-6}$       D)  $6.7 \times 10^6$       E) None of these

3) Which of the following values is the greatest?

- A) 0.005      B) 0.00005      C)  $5.0 \times 10^{-4}$       D) 0.05      E)  $5 \times 10^{-3}$

4) Sears is having an after Christmas sale on bikes. For January only, the price for a \$250 bike is reduced 40%. What is the sales price of the bike?

- A) \$150      B) \$100      C) None of these      D) \$125      E) \$175

5) If the purchase price of a cart full of items at WalMart is \$135.56 before tax, what was the final price of the items after the 5% sales tax is applied in Virginia?

- A) \$6.78                      B) \$142.34                      C) None of these                      D) \$139.76                      E) \$163.23

6) The retail price of a lawn mower is \$550. The markup is 45%. What is the wholesale price of the lawn mower?

- A) \$797.50                      B) \$379.31                      C) \$1000.00                      D) \$1797.50                      E) None of these

7) The sales price of a jacket is \$135.50. If it was marked down 30%, what was the retail price of the jacket before it went on sale?

- A) \$193.57                      B) None of these                      C) \$176.15                      D) \$154.86                      E) \$94.85

Find the slope of the line that goes through the pair of points.

8) (2, -2) and (6, 6)

- A) -2
- B) Undefined
- C) 1
- D) 2
- E) None of these

Write the equation in slope-intercept form,  $y = mx + b$ .

9)  $3x + 5y = -2$

- A)  $y = -\frac{3}{5}x - \frac{2}{5}$
- B)  $y = \frac{3}{5}x + \frac{2}{5}$
- C)  $y = -\frac{3}{5}x + \frac{2}{5}$
- D)  $y = x - \frac{2}{5}$
- E) None of these

10) What would the graph of model  $y = -4x + 25$  yield?

- A) An increasing linear model.
- C) A decreasing linear model.

- B) A parabola that opens up.
- D) A parabola that opens down.

11) A salesperson weekly, commission based salary is represented using the following model (where  $S$  represents the salary and  $x$  represents the number of items sold during a week).

$$S(x) = 300 + 40x$$

What does this equation mean?

- A) The weekly salary of the salesperson is \$300 minus \$40 for each sale that is made during the week.
- B) The weekly salary of the salesperson is \$40 plus \$300 for each sale that is made during the week.
- C) The weekly salary of the salesperson is \$300 plus \$40 for each sale that is made during the week.
- D) The weekly salary of the salesperson is \$300 for each sale that is made during the week.
- E) None of the above

12) Using the model in question #11, what is the weekly salary of the salesperson if 25 items were sold?

- A) \$300
- B) \$1000
- C) \$400
- D) \$1300
- E) None of these

Find the coordinate of the vertex of the parabola.

13)  $y = 2x^2 - 8x + 9$

- A) (2,1)
- B) (-2,-1)
- C) (1, 2)
- D) (-1, 2)
- E) None of these

- 14) In problem #13, the graph of the equation would yield:
- A) A line that decreases from left to right
  - B) A parabola that opens down
  - C) A parabola that opens up
  - D) None of these
  - E) A line that increases from left to right
- 15)  $f(x) = 4x + 8 + 5x^2$  is given the given function. What would the graph be?
- A) Linear function that decreases from left to right
  - B) Quadratic function: Parabola that opens up
  - C) Quadratic function: Parabola that opens down
  - D) Linear function that increases from left to right
- 16) The formula  $y = -0.033x^2 + 1.42x$  gives the distance  $y$ , in yards, that a football is kicked into the air where  $x$  is the horizontal distance the football travels in yards along the ground. How far did the ball travel along the ground?

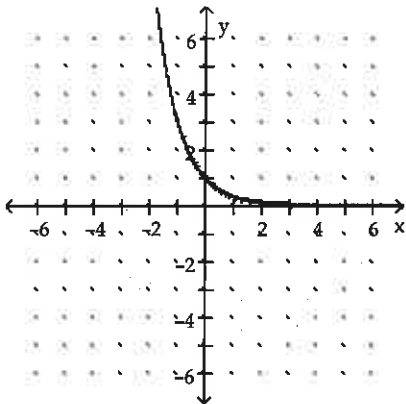
- A) About 43 yards
- B) About 27 yards
- C) About 21 yards
- D) About 14 yards
- E) About 15 yards

- 17) If graphed, the model:  $y = -2x^2 + 17$  would be:
- A) A graph that would decrease linearly
  - B) A graph that would decrease exponentially
  - C) A graph of a parabola that opens down.
  - D) A graph that would increase exponentially
  - E) A graph of a parabola that opens up

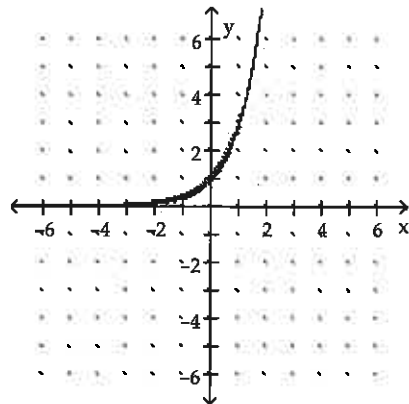
Graph the function.

18)  $f(x) = \left(\frac{1}{4}\right)^x$

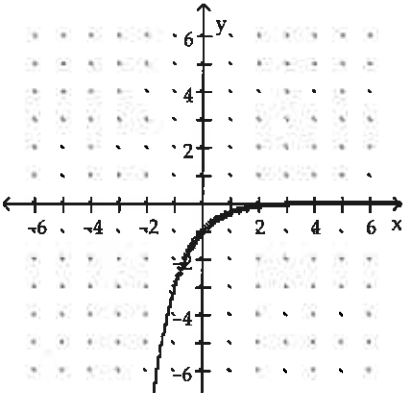
A)



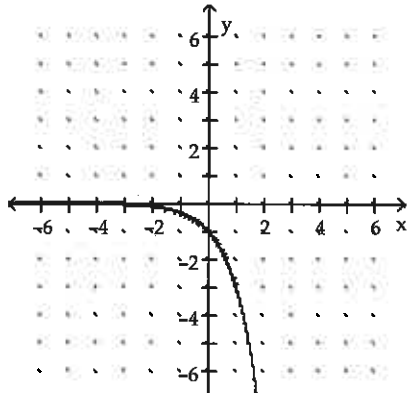
B)



C)



D)



19) Since 1970, the growth in the U.S. population in millions closely fits the exponential function  $P(t) = 200e^{0.018t}$ , where  $t$  is the number of years since 1970. Estimate the population in the year 2020.

A) 237 million

B) 332 million

C) 554 million

D) 876 million

E) 492 million

20) A dot com company estimates that its stock value from the time of its initial public offering (IPO) follows the function  $V(t) = e^{0.15t} + 15$  where  $V(t)$  represents the value in year  $t$ , with  $t = 0$  being 1996. Estimate the stock value in year 2015.

- A) About \$34      B) About \$32      C) About \$23      D) About \$56      E) About \$12

Convert to logarithmic form.

21)  $5^4 = 625$

- A)  $\log_4 625 = 5$       B)  $\log_5 625 = 4$       C)  $\log_{625} 5 = 4$       D) None of these

Convert to exponential form.

22)  $\log 10,000 = 4$

- A)  $4^3 = 10,000$       B)  $10^4 = 10,000$       C)  $1000^1 = 1000$       D)  $10^2 = 100$       E) None of these

23) Evaluate  $\ln(125)$  to four decimal places.

- A) 0.23971      B) 2.5675      C) 3.5263      D) 4.8283

24) Write the equation  $(3)^{-2} = \frac{1}{9}$  in logarithmic form.

- A)  $\log_{-2} \left(\frac{1}{9}\right) = 3$       B)  $\log_3 \left(\frac{1}{9}\right) = 2$       C)  $\log_{-3} \left(\frac{1}{9}\right) = 2$       D)  $\log_3 \left(\frac{1}{9}\right) = -2$

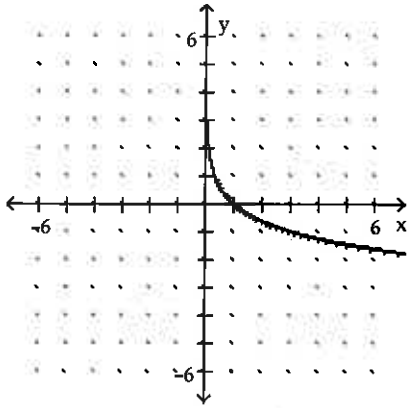
25)  $\log(72)$

- A) 1.857      B) None of these      C) 1      D) 4.277      E) 0.4343

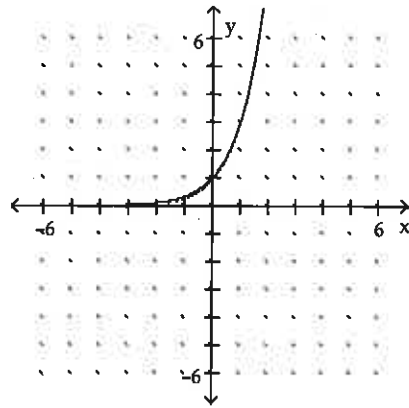
Graph the function.

26)  $y = e^x$

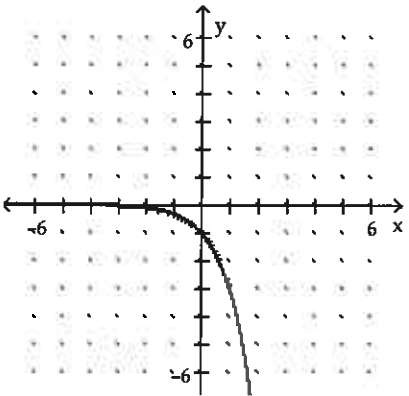
A)



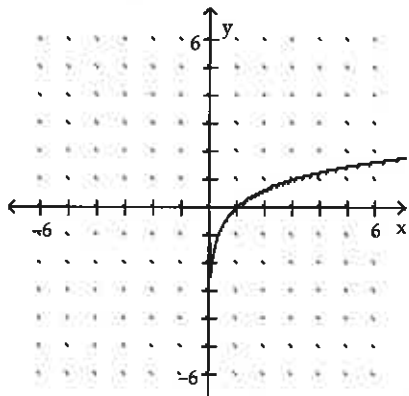
B)



C)



D)



Solve the problem below.

27) The approximate percentage of a girl's adult height that she has reached at age  $x$  is given by the model

$$P = 29 + 48.8 \log(x + 1)$$

where  $P$  is the percentage of adult height and  $x$  is the age of the girl. What percentage of adult height has the girl reached at age 10?

- A) 79.8%
- B) None of these
- C) 65.5%
- D) 72.3%
- E) 84.5%