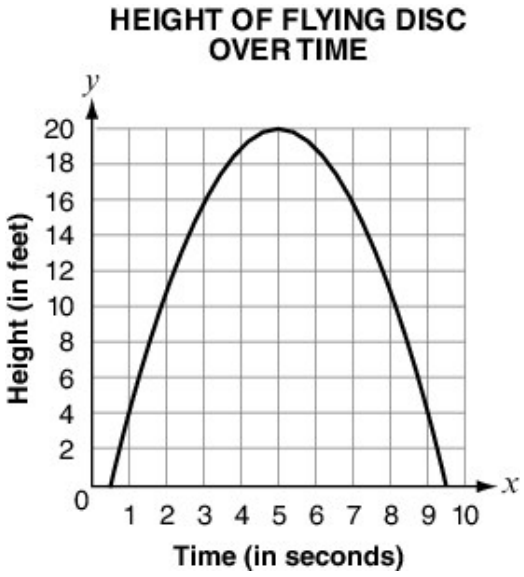
TEST NAME: **Math 1 online March 28**
TEST ID: **3001725**
GRADE: **09 - Ninth Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **My Classroom**

Student:

Class:

Date:

1. A flying disc is thrown up in the air. The graph below shows its height after t seconds.



Which of these statements is true?

A. The disc reaches its minimum height of 5 feet at 20 seconds.

B. The disc reaches its maximum height of 5 feet at 20 seconds.

C. The disc reaches its minimum height of 20 feet at 5 seconds.

D. The disc reaches its maximum height of 20 feet at 5 seconds.

2. **Which statement BEST describes the data in the table?**

x	*y*
– 1	– 7
0	– 5
3	1
5	5

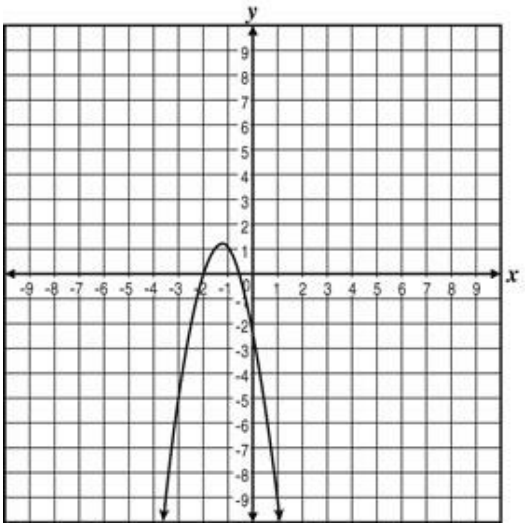
A. The value of y is 6 less than the value of x.

B. The value of y is 2 less than the value of x.

C. The value of y is 5 less than twice the value of x.

D. The value of y is 8 less than three times the value of x.

3. **The graph below represents the function** $f(x) = -2x^2 - 5x - 2$.



Which statement is true?

A. There are no y-intercepts.

B. There are no x-intercepts.

C. There is a y-intercept at $(0, -2)$.

D. There is a x-intercept at $(0, -2)$.

4. What is the y-intercept of the graph of $f(x) = 2(1.5)^x + 3$?

A. 2

B. 3

C. 4

D. 5

5. Jasmine compared the x-intercept of $f(x) = 2x - 8$ to the x-intercept of the function shown in the table below.

x	$g(x)$
0	16
2	32
4	48
6	64

What is the value of the larger x-intercept of the two functions?

A. $^{-}8$

B. $^{-}2$

C. 4

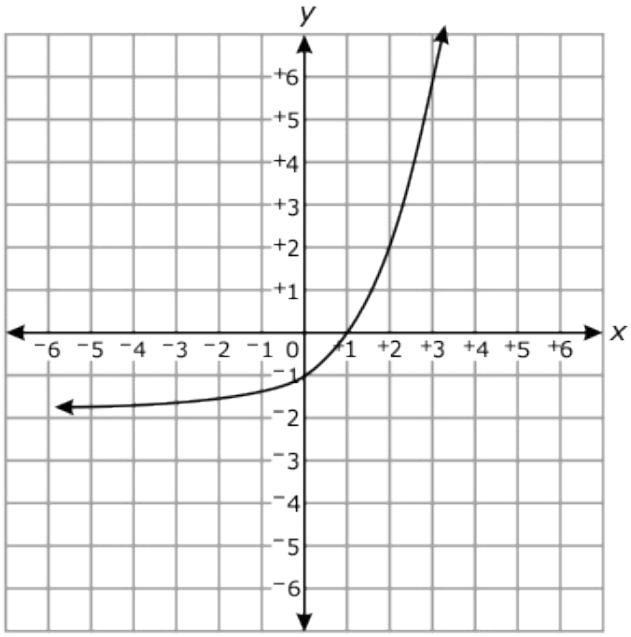
D. 16

6. Two exponential functions are shown below.

Function 1

x	3	5	7	9
$f(x)$	2	8	32	128

Function 2



What is the distance between the *y*-intercepts of the two functions?

A. 0.75 unit

B. 1.25 units

C. 2 units

D. 3 units

7. Leonard compared the cost of purchasing a gallon of gas at two different gas stations.

- The function $C(g) = 3.25 + 0.07x$ models the average cost of a gallon of gas at the first gas station after x months.
- The table below shows the average cost of a gallon of gas at the second gas station after different numbers of months.

Numbers of Months	Cost at Second Station
2	$3.40
4	$3.46
6	$3.52
8	$3.58

Which statement is true?

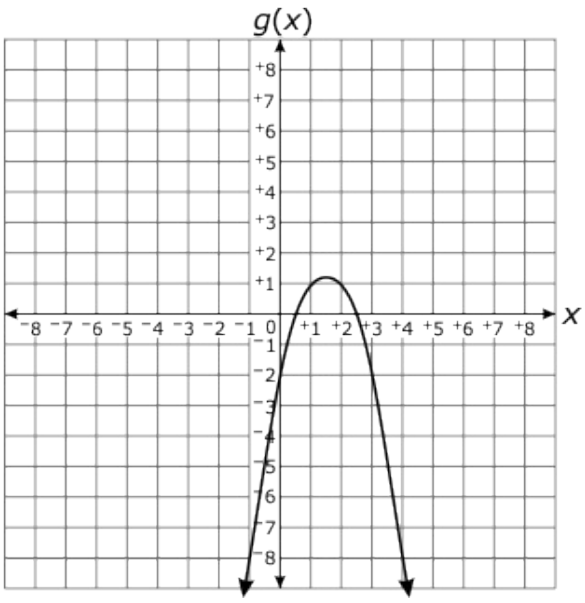
A. The first station had a higher initial price per gallon and increased at a greater amount per month than the second station.

B. The second station had a higher initial price per gallon and increased at a greater amount per month than the first station.

C. The first station had a higher initial price per gallon but increased at a smaller amount per month than the second station.

D. The second station had a higher initial price per gallon but increased at a smaller amount per month than the first station.

8. Leo compared the graph of $f(x) = x^2 + 9x + 18$ with the function graphed below.



Which statement is true about the two functions?

A. Both functions have a minimum.

B. Both functions have a maximum.

C. $f(x)$ has a minimum and $g(x)$ has a maximum.

D. $g(x)$ has a minimum and $f(x)$ has a maximum.

9. Which statement is true about the function $f(x) = 6x + 2$ and the linear function that fits the values in the table below?

x	$g(x)$
$^{-}1$	8
1	$^{-}4$
3	$^{-}16$
5	$^{-}28$
7	$^{-}40$

A. $f(x)$ has the same slope as $g(x)$.

B. $f(x)$ has the same y-intercept as $g(x)$.

C. $f(x)$ has the same x-intercept as $g(x)$.

D. $f(x)$ and $g(x)$ are the same function.

10. What is the average rate of change of the function $f(x) = {}^{-}3(2)^x$ over the interval $[{}^{-}1, 2]$?

A. $^{-}1.5$

B. $^{-}3.5$

C. $^{-}4.5$

D. $^{-}12$

11. Which statement is true regarding the function $y = 2x^2 + 4x - 1$?

A. The y-intercept of the function is $^{-}4$.

B. The x-intercept of the function is 2.

C. The minimum value of the function is $(^{-}1, {}^{-}3)$.

D. The maximum value of the function is (1, 5).

12. A rental company uses the function $f(x) = 150x + 75$ to calculate the cost to rent a beach house x number of nights. The maximum number of nights the beach house can be rented is 30. What is the domain of the function?

A. $0 \leq x \leq 30$, where x is a whole number

B. $0 < x < 30$, where x is a whole number

C. $0 \leq x \leq 4{,}575$, where x is a whole number

D. $0 < x < 4{,}575$, where x is a whole number

13. A function is shown in the table below.

x	***f*(*x*)**
0	1,750
3	1,900
7	1,950
9	2,180
11	2,240

During which interval was the average rate of change the greatest?

A. 0 to 3

B. 3 to 7

C. 7 to 9

D. 9 to 11

14. What is the minimum value of the function $f(x) = 3x^2 + 12x + 7$?

A. $^{-}5$

B. $^{-}4$

C. $^{-}2$

D. 7

15. **Which set of ordered pairs represents a function?**

A. $\{(3, 2), (4, 4), (6, 3), (4, 5)\}$

B. $\{(4, -3), (4, -1), (4, 3), (4, 6)\}$

C. $\{(-4, 4), (-2, 4), (1, 4), (5, 4)\}$

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

16. What is the ***approximate*** value of $f(7.1)$ for the function $f(x) = 4.12x + 35.89$?

A. 64.0

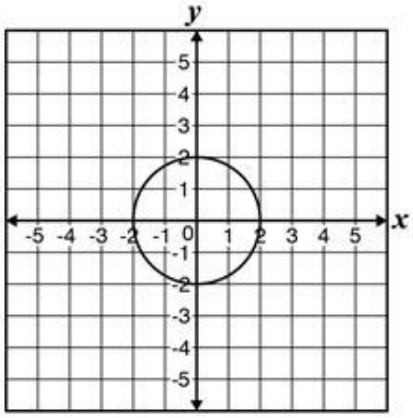
B. 64.5

C. 64.7

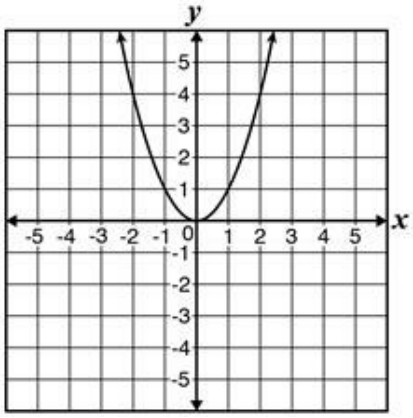
D. 65.1

17. **Which graph represents a function?**

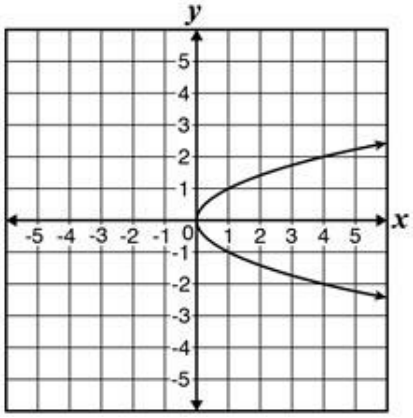
A.



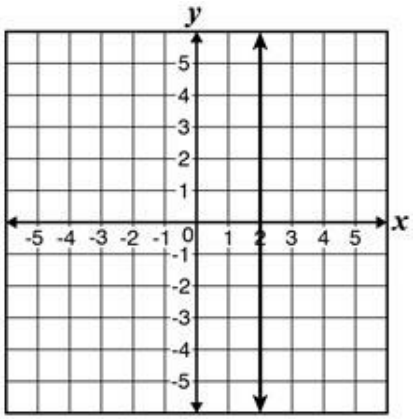
B.



C.



D.



18. The function $f(x) = 500(1.045)^x$ models the value of an investment after x years. What is the ***approximate*** value of the investment at $f(6)$?

A. $650

B. $710

C. $3,006

D. $3,135

19. An Internet company uses the function $f(x) = 6.052(1.378)^x$ to predict the number of subscribers (in millions) x years after 2000. ***Approximately*** what is the predicted number of Internet subscribers the company will have in 2019?

A. 442 million

B. 1 billion 943 million

C. 2 billion 677 million

D. 3 billion 689 million

20. Which of these represents a situation in which one quantity changes at a constant rate per unit interval?

A. The population of a sample of bacteria decreases by 25% every hour.

B. Every year, Albert's salary increases by 5%.

C. The value of a machine depreciates at the rate of 12% every year.

D. Every month, John saves 5% of his salary.

21. Which situation is ***best*** modeled by an exponential function?

A. A restaurant charges $5.75 per meal, plus 7.5% tax.

B. A cab company charges a flat fee of $2.50, plus $0.45 per mile traveled.

C. The number of cell phone subscribers increased by 75% per year for the last 20 years.

D. Water pressure is 14.7 pounds per square inch at sea level and increases an additional 14.7 pounds per square inch for every 10 meters of depth.

22. An arithmetic sequence is defined as follows:

$a_0 = 2$

$a_n = a_{[n-1]} - 9$

A student draws a graph with points at (n, a_n) for all values of n. What is the slope of the graph?

A. -9

B. $-\frac{1}{9}$

C. $\frac{2}{9}$

D. 9

23. A scientist monitored the growth of two types of bacteria.

- The function $f(x) = 200(1.5)^x$ models the amount of bacteria A x hours after the scientist began monitoring the samples.
- The function $f(x) = 150x + 350$ models the amount of bacteria B x hours after the scientist began monitoring the samples.

Approximately how long will it take the number of bacteria in bacteria A to be larger than bacteria B?

A. 3.4 hours

B. 3.7 hours

C. 4.5 hours

D. 4.7 hours