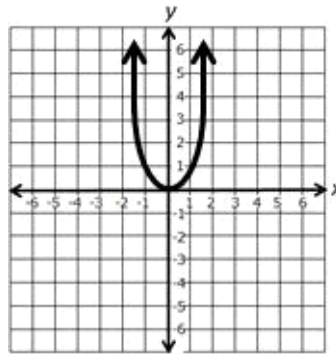
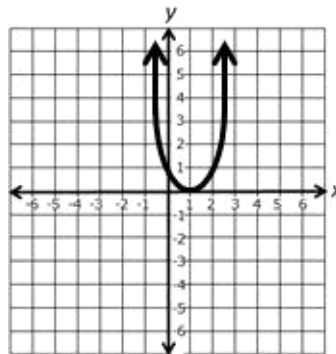


Exam not valid for Paper Pencil Test Sessions1 **Given****Which transformation best describes the graph below?**

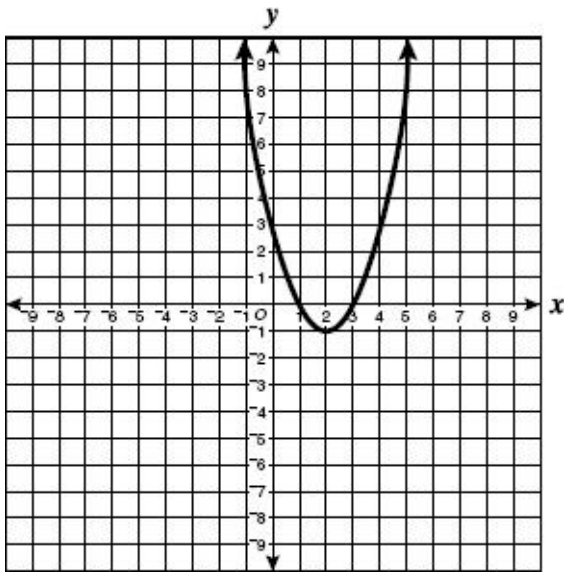
A Shifted down 1

B Shifted left 1

C Shifted right 1

D Shifted up 1

2



Which of the following is most likely the equation graphed above?

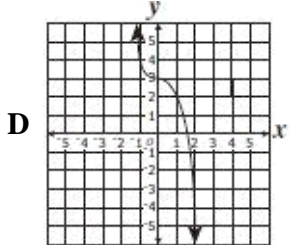
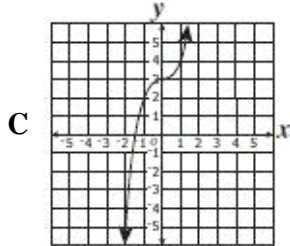
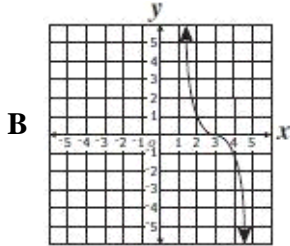
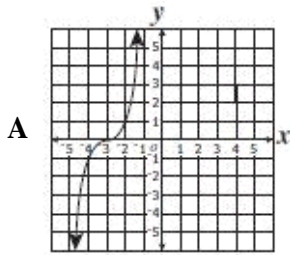
- A $y = 5(x - 1)^2 - 2$
- B $y = (x + 2)^2 + 1$
- C $y = (x - 2)^2 + 2$
- D $y = (x - 2)^2 - 1$

3

In a normal distribution, what is the probability that a data value will fall above the data value associated with a z -score of -0.56 ?

- A 0.2776%
- B 27.76%
- C 28.77%
- D 71.23%
- E 72.24%

4 Which graph most accurately represents the function $f(x) = -x^3 + 3$?



5 If y varies inversely as the square root of x , what is the constant of proportionality if $y = 16$ when $x = 4$?

- A 4
- B 8
- C 32
- D 64

6 The graph of $y = 4x - 11$ is translated up 8 units. Which equation represents the translated graph?

- A $y = 4x - 19$
- B $y = 12x - 11$
- C $y = 4x - 3$
- D $y = 12x - 3$

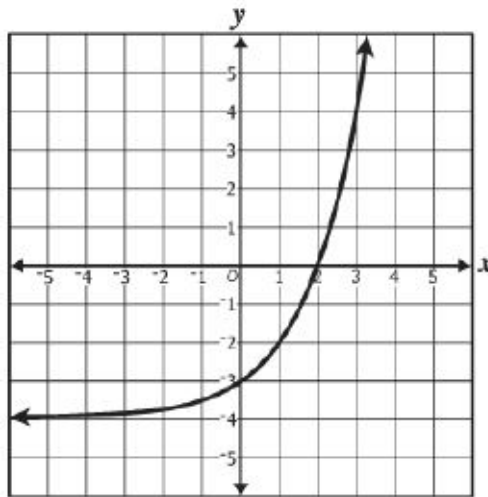
7 Directions: Type your answer in the box.

The table shows that y is directly proportional to x .

x	y
14	4
17.5	5
21	6
?	1

What number completes the table? Calculate answer as a decimal.

8 Which function best represents this graph?



- A $f(x) = 2^{(x + 2)}$
- B $f(x) = 2^{(x - 2)}$
- C $f(x) = 2^x - 3$
- D $f(x) = 2^x - 4$

9 The height of an object when projected upward can be described by the equation $h = 270t - 4.9t^2$, where h is height and t is time. The relationship between the height of the object and the elapsed time is —

- A an exponential function
- B a linear function
- C a quadratic function
- D a step function

- 10 The volume of a cone (V) varies jointly with its height (h) and the square of its radius (r). If k is the constant of proportionality, which of the following equations represents the correct relationship between volume, radius, and height?
- A $V = k(rh)^2$
- B $V = \frac{kr^2}{h}$
- C $V = \frac{k}{r^2h}$
- D $V = kr^2h$

- 11 The number of permutations of 8 objects taken 3 at a time is —
- A 40,320
- B 6,720
- C 4,920
- D 336

- 12 Directions: Click on a box to choose each answer you want to select. You must select all correct answers.

Identify each situation that can be answered using a combination.

Eight students are competing in a spelling contest. How many ways can they award a 1st, 2nd and 3rd place prize among the eight contestants?

Sara has a choice of 3 different colors from the box of 150 crayons to use in her picture. How many different color possibilities are there?

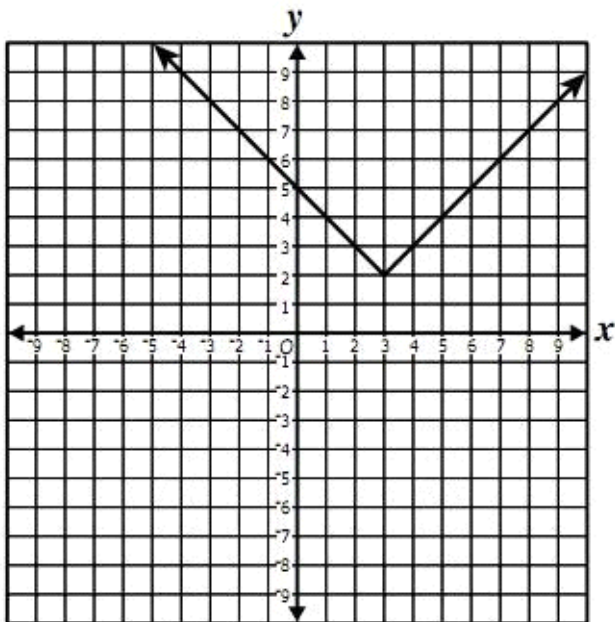
From a committee of 7 people, how many different ways can you pick a president, vice-president and secretary?

Three people from a company of 50 employees are selected to go to a conference. How many groups of people could be selected?

- 13 Which shows four consecutive terms of a geometric sequence?
- A 2, 4, 7, 11,...
- B 3, 5, 7, 9,...
- C 16, 12, 9, 5,...
- D 6, 18, 54, 162,...

- 14 What type of function is $y = 2^x + 8$?
- A Step
- B Exponential
- C Quadratic
- D Linear

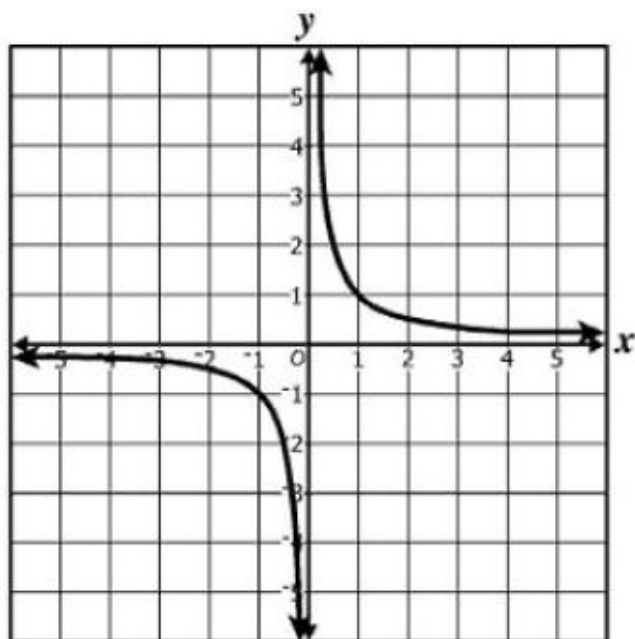
15 The graph *most* accurately represents which of the following functions?



- A $y = |x - 3| + 2$
- B $y = |x + 3| + 2$
- C $y = |x - 2| + 3$
- D $y = |x + 2| + 3$

16

The graph of a parent function is shown.



What function belongs to this same family?

- A $g(x) = -\log(x - 1)$
- B $g(x) = \left(\frac{1}{3}\right)^{(x-1)}$
- C $g(x) = 3^{(x-1)}$
- D $g(x) = \frac{3}{x-1}$

17 What is the inverse of $f(x) = 4^{(x+1)} - 1$?

A $f^{-1}(x) = \log_{(x+1)} + 4$

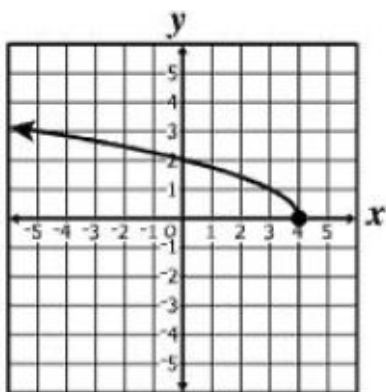
B $f^{-1}(x) = \log_4(x+1) - 1$

C $f^{-1}(x) = \log_4(x+1)$

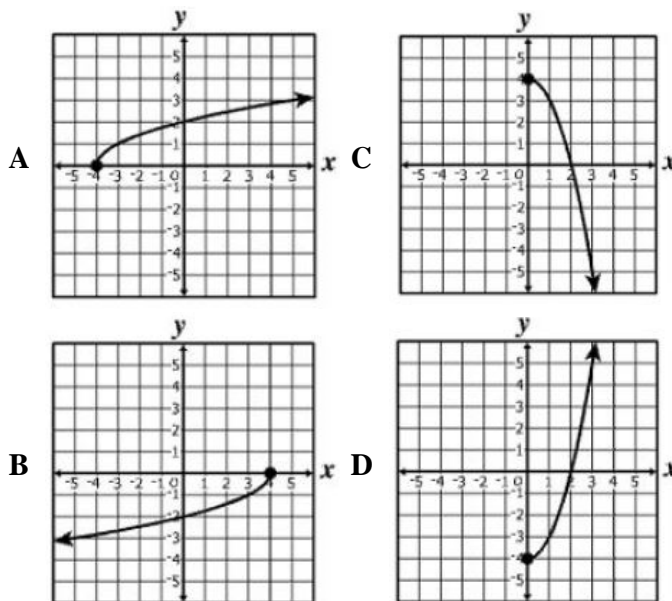
D $f^{-1}(x) = \log_{(x+1)} + 3$

18

The graph of the function g is shown on the following grid.

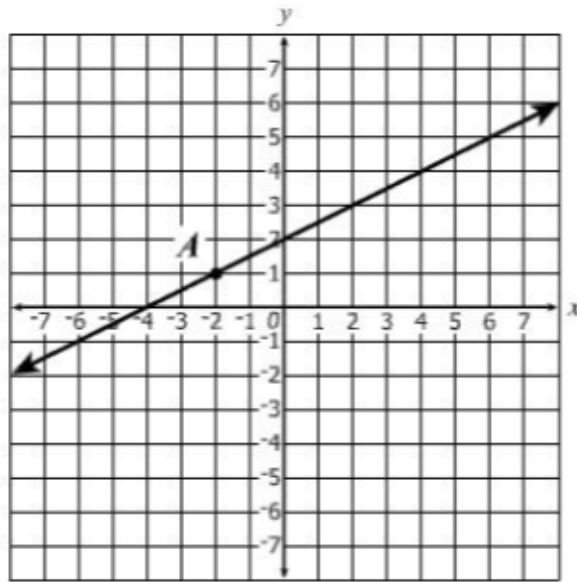


Which graph best represents the inverse of g ?



19 Directions: Click on the correct answers.

Point A lies on the graph of $f(x) = \frac{1}{2}x + 2$. Identify each true statement.



The point (3, 2) lies on the graph of $f^{-1}(x)$.

The image of Point A that lies on the graph of $f^{-1}(x)$ is (1, -2).

The point (4, -4) lies on the graph of $f^{-1}(x)$.

The image of Point A that lies on the graph of $f^{-1}(x)$ is (2, -1).

20 The heights of a large population of ostriches are normally distributed. Which is closest to the percentage of these heights that is within 3 standard deviations of the mean?

- A 0.3%
- B 5%
- C 95%
- D 99.7%

21 Which function is the inverse of $g(x) = x^3 + 11$?

- A $g^{-1}(x) = \sqrt[3]{x - 11}$
- B $g^{-1}(x) = \sqrt[3]{x + 11}$
- C $g^{-1}(x) = x - \sqrt[3]{11}$
- D $g^{-1}(x) = x + \sqrt[3]{11}$

22 Which of the following represents the inverse of $y = 2x + 4$?

A $y = \frac{-x + 4}{2}$

B $y = \frac{x - 4}{2}$

C $y = 2x - 4$

D $y = -2x - 4$

23 If $f(x) = x^5$ and $g(x) = -2 - 3x^2$, which is $f(g(x))$?

A $(-2 - 3x^{10})^5$

B $-2x^5 - 3x^7$

C $\frac{x^5}{-2x - 3x^{10}}$

D $(-2 - 3x^2)^5$

24 What is the sum of the first 20 terms of the arithmetic sequence shown?

$$\frac{1}{3}, \frac{2}{3}, 1, \frac{4}{3}, \frac{5}{3}, \dots$$

A 5

B 20

C 70

D 140

25 Directions: Click and drag each answer to the correct box.

Given $f(x) = |x| + 1$ and $g(x) = x - 7$, place each value next to the appropriate composition. Place the unused value next to the trash can.

$$f(g(5)) = 3$$

$$g(f(5)) = -1$$



-4

26 Michael scored 450 on his 2012 SOL. Mary, who took the test in 2013 scored 448. If the mean of the 2012 test was 440 with a standard deviation of 23 and the 2013 test had a mean of 442 and a standard deviation of 23, who did better on their respective test?

- A Neither
- B Both were the same
- C Mary
- D Michael

27 Directions: Type your answer in the box.

Given $f(x) = x^3$ and $g(x) = x - 1$, find $f(g(2)) + g(f(-1))$.

28 Given: $f(x) = 4x^4 - 15$ and $g(x) = 2x + 11$

What is the value of $g(f(x))$?

A $8x^5 + 44x^4 - 30x - 165$

B $8x^5 - 165$

C $8x^4 - 4$

D $8x^4 - 19$

29 If $f(x) = x^2 + 3x$ and $g(x) = 2x^2$, what is $g(f(-1))$?

A -4

B 0

C 8

D 10

30 Given: $f(x) = x^3 - 3x$ and $g(x) = x^2 - 8$.

What is $f(10) - g(10)$?

A 878

B 783

C 608

D 862