

1.

Find an equation for the inverse of the relation $y = 5x - 7$.

Choose the correct inverse relation.

- ☐ A. $x = 5y + 7$
- ☐ B. $y = 7 - 5x$
- ☐ C. $x = 7 - 5y$
- ☐ D. $x = 5y - 7$

The relation $y = 5x - 7$ includes the points in the following table.

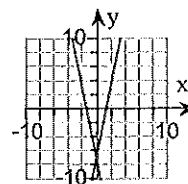
x	y
0	-7
1	-2
2	3

Complete the table for the inverse of $y = 5x - 7$.

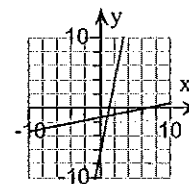
x	y
-7	
-2	
3	

Choose the graphs of $y = 5x - 7$ and its inverse.

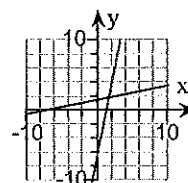
☐ A.



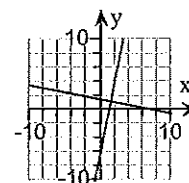
☐ B.



☐ C.



☐ D.



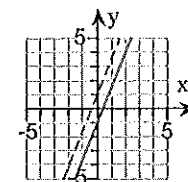
2.

Graph the inverse of the function.

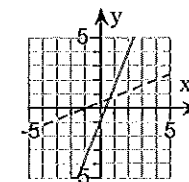
$$f(x) = \frac{5}{2}x - 1$$

Choose the graph with the original function as a red, solid line and the inverse of the function as a blue, dashed line.

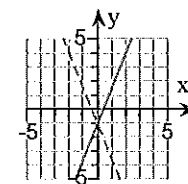
☐ A.



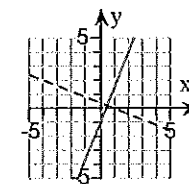
☐ B.



☐ C.



☐ D.



3.

Determine whether the function is one-to-one. If it is, find a formula for its inverse.

$$f(x) = \frac{4}{7}x + 8$$

Is $f(x) = \frac{4}{7}x + 8$ a one-to-one function?

☐ No ☐ Yes

Find the formula for $f^{-1}(x)$, the inverse of $f(x) = \frac{4}{7}x + 8$.

☐ A. $f^{-1}(x) = \frac{4}{7}x + 8$

☐ B. $f^{-1}(x) = \frac{4}{7}x - 14$

☐ C. $f^{-1}(x) = \frac{4}{7}x - 2$

☐ D. $f^{-1}(x) = \frac{4}{7}x + 14$

4.

Using the horizontal line test, determine whether the function is one-to-one.

$$f(x) = 2.8^x$$

Is the function one-to-one?

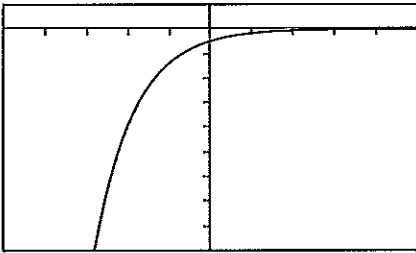
☐ No ☐ Yes

5.

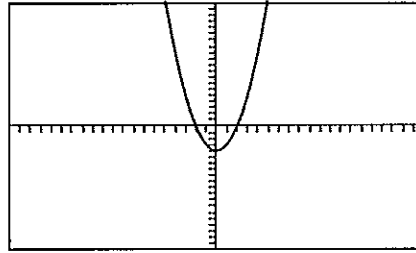
Use the horizontal line test to determine whether the function is one-to-one.

Is the function one-to-one?

☐ Yes ☐ No



$[-5, 5, -2, 18]$ Xscl = 1 Yscl = 2



$$f(x) = -x^2 + 4$$

$[-10, 10, -10, 10]$ Xscl = 1 Yscl = 1

6.

Determine whether the function is one-to-one.

$$f(x) = |x + 4|$$

Is the function one-to-one?

☐ Yes

☐ No

7. Determine whether the function is one-to-one. If it is, find a formula for its inverse.

$$f(x) = \frac{x + 9}{7}$$

Is the function one-to-one?

☐ No

☐ Yes

What is the inverse function? Select the correct choice below and fill in the answer box within your choice if necessary.

☐ A. $f^{-1}(x) = \square$

☐ B. The function is not one-to-one.

8. Determine whether the function is one-to-one. If it is, find a formula for its inverse.

$$f(x) = x^3 - 5$$

Is the function one-to-one?

☐ No

☐ Yes

Select the correct choice below and fill in any answer boxes within your choice.

☐ A. The inverse function is $f^{-1}(x) = \square$.

☐ B. There is no inverse function.

9. Show that $f(x) = \frac{2}{3}x + 1$ and $f^{-1}(x) = \frac{3x - 3}{2}$ are inverses.

Choose the appropriate equality that will show that $f(x)$ and $f^{-1}(x)$ are inverses.

☐ A. $(f + f^{-1})(x) = (f^{-1} + f)(x) = x$

☐ B. $(f \circ f^{-1})(x) = (f^{-1} \circ f)(x) = x$

☐ C. $(f \circ f^{-1})(x) = (f^{-1} \circ f)(x) = 1$

☐ D. $(f \cdot f^{-1})(x) = (f^{-1} \cdot f)(x) = 1$

10. For the function $f(x) = 5x - 6$ determine whether $f(x)$ is one-to-one. If so, find a formula for the inverse, give the domain and the range for f^{-1} , and then graph both functions on the same axes.

Is $f(x)$ a one-to-one function?

- ☐ No
☐ Yes

The inverse function is $f^{-1} = \square$.

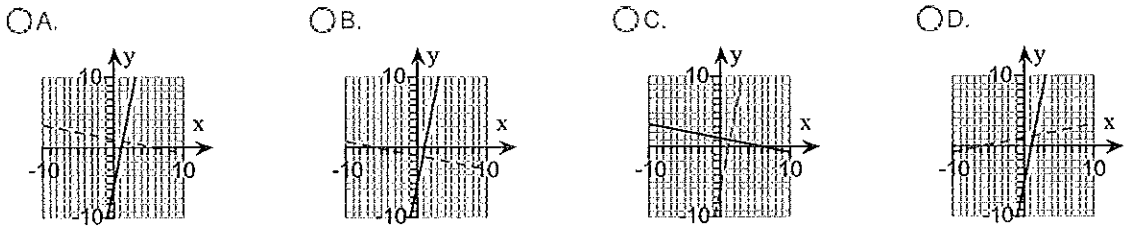
Choose the correct domain below.

- ☐ A. $[-\infty, \infty]$
☐ B. $(-\infty, 0)$
☐ C. $(0, -\infty)$
☐ D. $(-\infty, \infty)$

Choose the correct range below.

- ☐ A. $(-\infty, 0)$
☐ B. $[-\infty, \infty]$
☐ C. $(0, -\infty)$
☐ D. $(-\infty, \infty)$

Choose the correct graph for f and f^{-1} below.



Find the inverse of the one-to-one function $f(x) = \frac{x+6}{x-7}$. Give the domain and the range of f and f^{-1} .

What is the inverse of $f(x)$?

$$f^{-1}(x) = \square$$

What is the domain of f ?

☐ A. $(-\infty, 1) \cup (1, \infty)$

☐ C. $(-\infty, -6) \cup (-6, \infty)$

What is the domain of f^{-1} ?

☐ A. $(-\infty, 1) \cup (1, \infty)$

☐ C. $(-\infty, 7) \cup (7, \infty)$

What is the range of f ?

☐ A. $(-\infty, -6) \cup (-6, \infty)$

☐ C. $(-\infty, 7) \cup (7, \infty)$

What is the range of f^{-1} ?

☐ A. $(-\infty, 1) \cup (1, \infty)$

☐ C. $\left(-\infty, -\frac{7}{6}\right) \cup \left(-\frac{7}{6}, \infty\right)$

☐ B. $(-\infty, 7) \cup (7, \infty)$

☐ D. $(-\infty, -6) \cup (-6, \infty)$

12.

Use a calculator to approximate the exponential expression to 4 decimal places.

$$e^7$$

$e^7 \approx \square$ (Round to four decimal places as needed.)

13.

Use a calculator to find the value to the nearest ten-thousandth.

$$e^{-3.45}$$

$$e^{-3.45} = \square$$

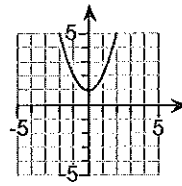
(Round to four decimal places as needed.)

14. Graph the equation on paper, and then choose the correct graph.

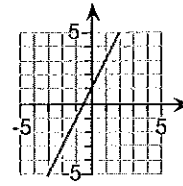
$$y = 2^x$$

Choose the correct graph on the right.

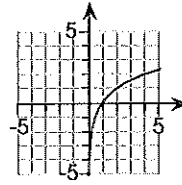
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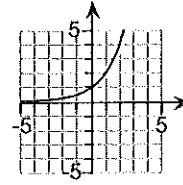
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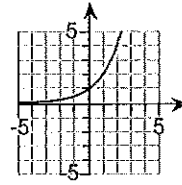


15. Graph the equation on paper, and then choose the correct graph.

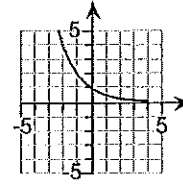
$$y = \left(\frac{1}{2}\right)^x$$

Choose the correct graph.

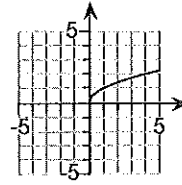
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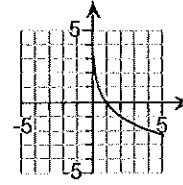
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☐



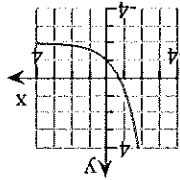
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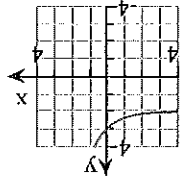
16.

Graph $f(x) = e^x - 2$.

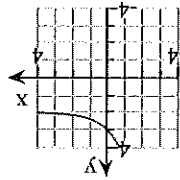
Choose the correct graph.



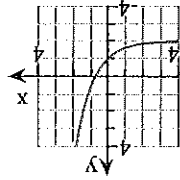
☐ C.



☐ B.



☐ D.

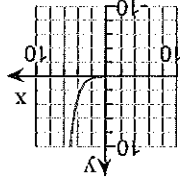


17.

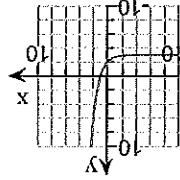
Sketch the graph of $f(x) = 3^x - 3$.

Choose the correct graph below.

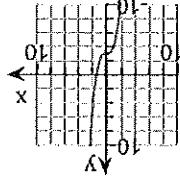
☐ A.



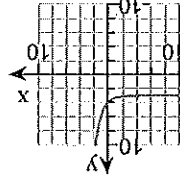
☐ B.



☐ C.



☐ D.

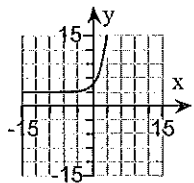


18. Sketch the graph of the following function. Describe how the graph can be obtained from the graph of the basic exponential function 2^x .

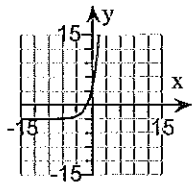
$$f(x) = 3 \cdot 2^{x-1} + 3$$

Choose the correct graph below.

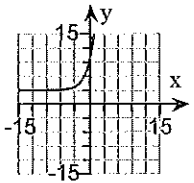
☐ A.



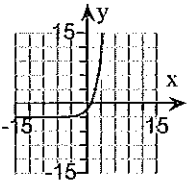
☐ B.



☐ C.



☐ D.



Describe how the graph can be obtained from the graph of the basic exponential function 2^x . Choose the correct answer below.

- ☐ A. Shift the graph of $y = 2^x$ right 1 unit, stretch it vertically, and shift it up 3 units.
- ☐ B. Shift the graph of $y = 2^x$ right 1 unit, stretch it vertically, and shift it down 3 units.
- ☐ C. Shift the graph of $y = 2^x$ left 1 unit, stretch it vertically, and shift it up 3 units.
- ☐ D. Shift the graph of $y = 2^x$ left 1 unit, stretch it vertically, and shift it down 3 units.

19.

On Melissa's 6th birthday, she gets a \$2000 CD that earns 6% interest, compounded quarterly. If the CD matures on her 10th birthday, how much money will be available?

The amount available will be \$.

(Simplify your answer. Round to the nearest cent.)

20.

Use the compound interest formula $A = P \left(1 + \frac{r}{n} \right)^{nt}$ to compute the total amount after \$2000 is invested at 4% over 3 years compounded daily. (Use $n = 365$.) Then compute the interest earned.

The total amount is \$.

(Round to the nearest cent.)

The interest earned is \$.

(Round to the nearest cent.)

Although the people in a country throw 1 500 aluminum cans in the trash every second of every day, 51.5% of the aluminum in the cans is recycled. If a beverage company distributes 450,000 cans, the amount of aluminum still in use after t years can be made into $N(t) = 450,000(0.515)^t$. Answer the following.

a) How many cans can be made from the original 450,000 cans after 1 year? After 5 years? After 8 years?

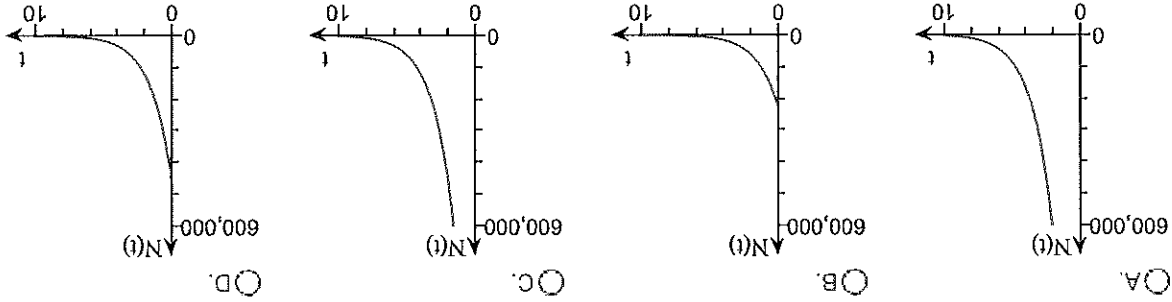
b) Graph the function.

a) After 1 year, cans can be made from the original 450,000 cans.
(Round to the nearest whole number as needed.)

After 5 years, cans can be made from the original 450,000 cans.
(Round to the nearest whole number as needed.)

After 8 years, cans can be made from the original 450,000 cans.
(Round to the nearest whole number as needed.)

b) Which of the following is the graph of $N(t) = 450,000(0.515)^t$?



22. Find the logarithm.
 $\log_3 27 = \square$

23. Find the logarithm.
 $\log_{10} 1000 = \square$

24. Find the logarithm.
 $\log_3 \frac{1}{27} = \square$

25. Find the value of the logarithm. $\ln(1) = \square$

$\ln(1)$

.....