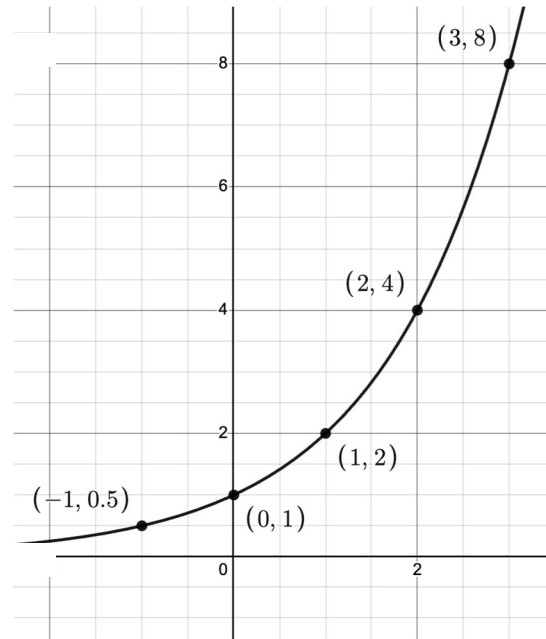


Write your questions
and thoughts here!Exponential $f(x) = 2^x$

x	$f(x)$

Logarithmic $g(x) = \log_2 x$

x	$f(x)$

**BIG IDEA**

- The graphs are a reflection in the function
- The domain of the exponential function is the range of the logarithmic function.
- The range of the exponential function is the domain of the logarithmic function.
- The operations undo each other (like multiplication and division)
- $f(g(x)) = g(f(x)) = x$

Describe the function $f(x)$ as exponential or logarithmic and then find points for its inverse, $g(x)$.

Ex 1:

x	$f(x)$
-1	$\frac{1}{3}$
0	1
1	3
2	9
3	27

x	$g(x)$

Ex 2:

x	$f(x)$
$\frac{1}{4}$	-1
1	0
4	1
16	2
64	4

x	$g(x)$

Write your questions
and thoughts here!

INVERSES UNDO EACH OTHER

$$2^x$$

$$\log_2 x$$

Are the following functions inverses of each other?

$$f(x) = 2^x$$

$$g(x) = \log_2 x$$

In other words, does $f(g(x)) = g(f(x)) = x$?

Find the inverse of each of the following.

Ex 3: $f(x) = 3 \log_5 x$

Ex 4: $f(x) = 10^{\frac{x}{6}}$

Try these:

1. Determine if $f(x)$ and $g(x)$ are inverses.
 $f(x) = 5^{4x}$ and $g(x) = 4 \log_5 x$

2. Find the inverse of $f(x) = 10 \log_2 x$.

2.10 Inverses of Exponential Functions

AP Precalculus

2.10 Practice

Describe the function $f(x)$ as exponential, logarithmic, or neither and how you know why it is that function.
Then find points for its inverse $g(x)$.

1.

x	$f(x)$
3	8
4	16
5	32
6	64

x	$g(x)$

2.

x	$f(x)$
$\frac{1}{9}$	-2
$\frac{1}{3}$	-1
1	0
3	1

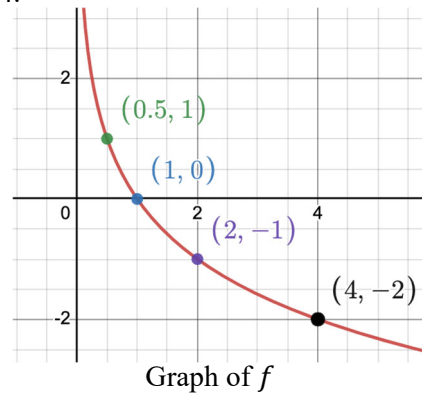
x	$g(x)$

3.

x	$f(x)$
0	1
1	4
2	7
3	10

x	$g(x)$

4.



x	$g(x)$

Determine if $f(x)$ and $g(x)$ are inverses.

5. $f(x) = 2 \log_2 x$ and $g(x) = 2^{2x}$

6. $f(x) = 10^{0.25x}$ and $g(x) = 4 \log x$

7. $f(x) = 5^{\frac{x}{8}}$ and $g(x) = 8 \log_5 x$

Find the inverse of the given function.

8. $h(x) = 4^{5x}$

9. $m(x) = 5 \log_2 x$

Find the inverse of the given function.

10. $a(x) = \frac{1}{4} \log_8 x$

11. $b(x) = 10^{\frac{3}{4}x}$

2.10 Inverses of Exponential Functions

2.10 Test Prep

12. Which of the following represents a possible function that is the inverse of $f(x) = 0.25^x$?

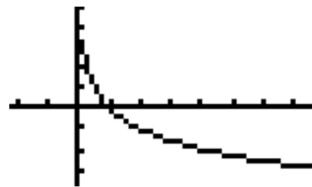
(A)

x	$f(x)$
-3	64
-2	16
-1	4
0	1

(B)

x	$f(x)$
4	-1
1	0
$\frac{1}{4}$	1
$\frac{1}{16}$	2

(C)



(D)

