1.(1 pt) Enter T or F depending on whether the function is one-to-one or not. (You must enter T or F – True and False will not work.)

1. $e(x) = 6\sqrt{x+2}$
2. $a(x) = 6x^4 - 2x$
3. $d(x) = (3x-8)^2 + 6$
4. $b(x) = 8x^3 - 6x$
5. $c(x) = \frac{x-6}{2+x}$

2.(1 pt) Enter a Y (for Yes) or an N (for No) in each answer space below to indicate whether the corresponding function is one-to-one or not.

You must get all of the answers correct to receive credit.

1. $k(x) = \cos x, \quad 0 \le x \le \pi$
2. $g(t) = 6t^2 + 6$
3. $k(x) = (x-6)^2, \quad 5 \le x \le 7$
4. $k(t) = 4\sqrt{t} + 8$
5. $h(x) = |x| + 6$
6. $f(t) = 2^t$

3.(1 pt) Enter a Y (for Yes) or an N (for No) in each answer space below to indicate whether the corresponding function is one-to-one or not.

You must get all of the answers correct to receive credit.

1. $h(x) = |x| + 3$
2. $g(x) = 8\sqrt{x} - 4$
3. $f(t) = 8t^2 + 4, \quad t \ge 0$
4. $f(x) = 3x - 6$

4.(1 pt)

Determine if each of the following functions from $\{a,b,c,d\}$ to itself is one-to-one and/or onto.
Check ALL correct answers.

(a) $f(a) = b, f(b) = b, f(c) = d, f(d) = c$

- A. onto.
- B. one-to-one.
- C. neither one-to-one nor onto.

$f(a) = d, f(b) = b, f(c) = c, f(d) = d$

- A. neither one-to-one nor onto.
- B. one-to-one.
- C. onto.

$f(a) = c, f(b) = d, f(c) = a$

- A. one-to-one.
- B. onto.
- C. neither one-to-one nor onto.

5.(1 pt) Enter a T or an F in each answer space below to indicate whether or not the given function has an inverse. Unless otherwise indicated, assume the domain of the function is as large as possible.

You must get all of the answers correct to receive credit.

1. $24x + 3\sin(4x)$
2. $\ln(x^{10})$
3. $2\sin(x) - 5\cos(6x)$
4. $10\ln(x)$
5. $2x^3 - 33x^2 + 168x + 5$ on the interval $[0,7]$
6. $2x^3 - 33x^2 + 168x + 5$ on the interval $[7,\infty)$

6.(1 pt) If f is one-to-one and $f(-5) = 7$, then
$f^{-1}(7) =$ _____
and $(f(-5))^{-1} =$ _____ .
If g is one-to-one and $g(-11) = 3$, then
$g^{-1}(3) =$ _____
and $(g(-11))^{-1} =$ _____ .
If h is one-to-one and $h(10) = 6$, then
$h^{-1}(6) =$ _____
and $(h(10))^{-1} =$ _____

7.(1 pt) (a) If f is one-to-one and $f(-5) = 15$, then $f^{-1}(15) =$ _____ and $(f(-5))^{-1} =$ _____ .
(b) If g is one-to-one and $g(-2) = 15$, then $g^{-1}(15) =$ ____
and $(g(-2))^{-1} =$ _____ .

8.(1 pt) If $f(x) = 15x - 8$, then
$f^{-1}(y) =$ _____
$f^{-1}(10) =$ _____

9.(1 pt) If $f(x) = x^2, \quad x \ge 0$,
then $f^{-1}(4) =$ _____

10.(1 pt) Let

$$f(x) = 3x + 15$$

$f^{-1}(x) =$ _____

11.(1 pt) Let

$$f(x) = 9 - x$$

$f^{-1}(x) =$ _____

12.(1 pt) Let

$$f(x) = \frac{1}{x+15}$$

$f^{-1}(x) =$ _____

13.(1 pt) Let

$$f(x) = 7 - x^2, \quad x \ge 0$$

$f^{-1}(x) =$ _____

14.(1 pt) Let

$$f(x) = \frac{x+1}{x+6}$$

$f^{-1}(-2) =$ _____

15.(1 pt) Let

$$f(x) = \frac{1}{2}x + 2, \quad -2 \le x \le 8$$

The domain of f^{-1} is the interval $[A,B]$
where $A =$ _____ and where $B =$ _____

16.(1 pt) Let

$$f(x) = 5 + 4x + 2e^x$$

$f^{-1}(7) =$ _____

17.(1 pt) Find the inverse for each of the following functions.

$f(x) = 14x + 10$

$f^{-1}(x) =$ _____

$g(x) = 14x^3 - 2$

$g^{-1}(x) =$ _____

$h(x) = \frac{14}{x+2}$

$h^{-1}(x) =$ _____

$j(x) = \sqrt[3]{x+14}$

$j^{-1}(x) =$ _____

18.(1 pt)

$$f(x) = \frac{2e^x - 8}{7e^x + 8}$$

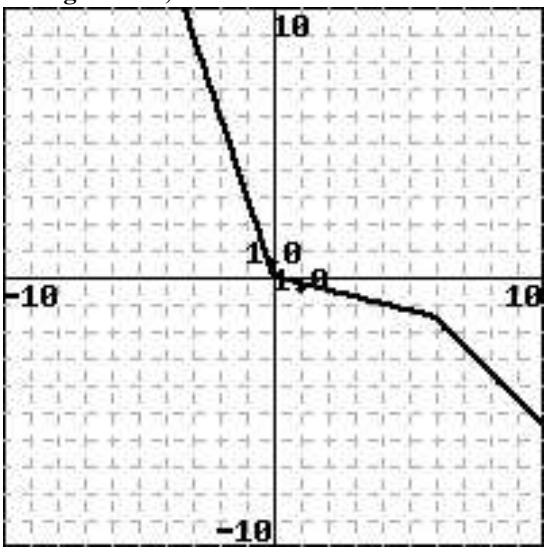
$f^{-1}(x) =$ _____

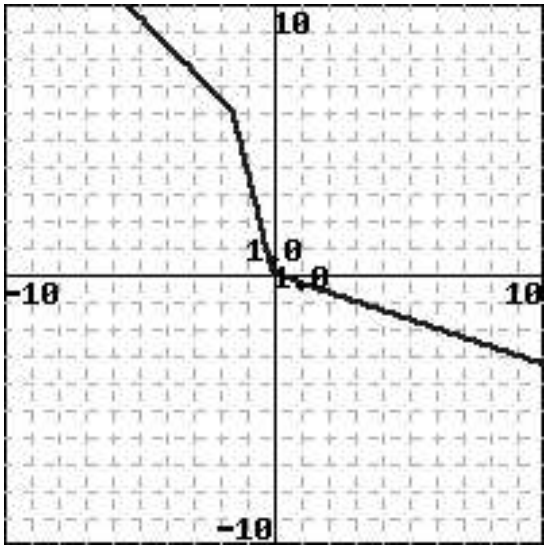
The domain of $f^{-1}(x)$ is the open interval (a, b), where

$a =$ _____

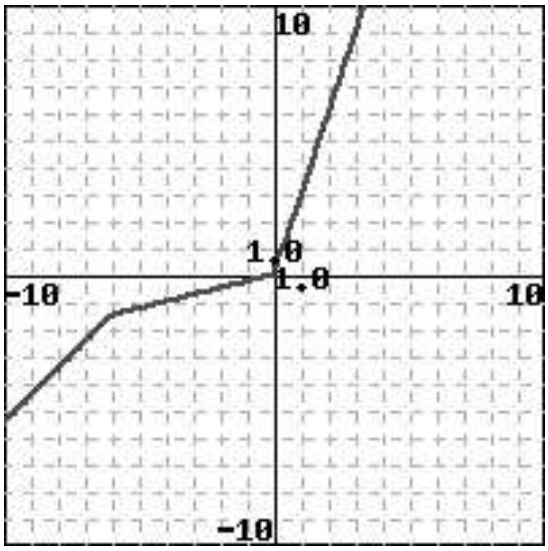
and $b =$ _____

19.(1 pt) Below is the graph of a function f: (**Click on image for a larger view**)

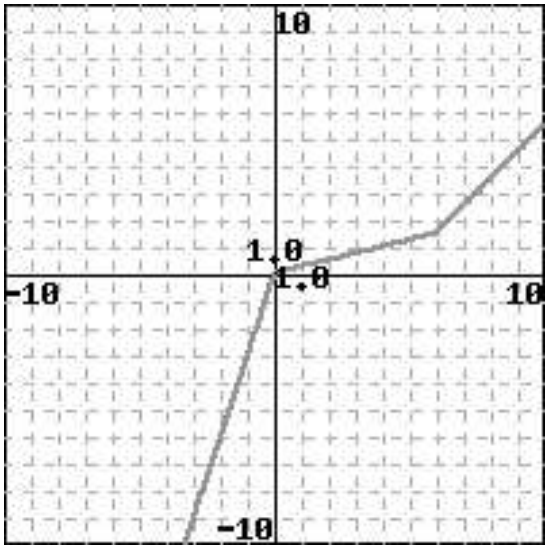




Graph A



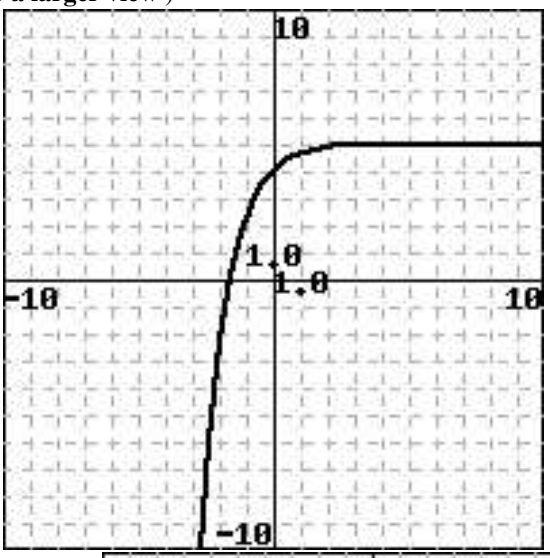
Graph B

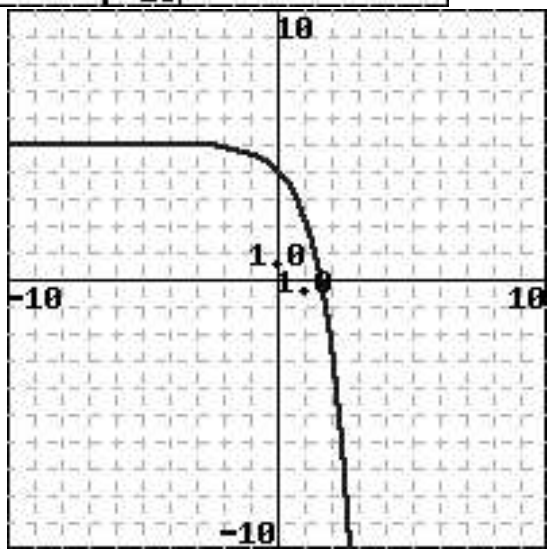


Graph C

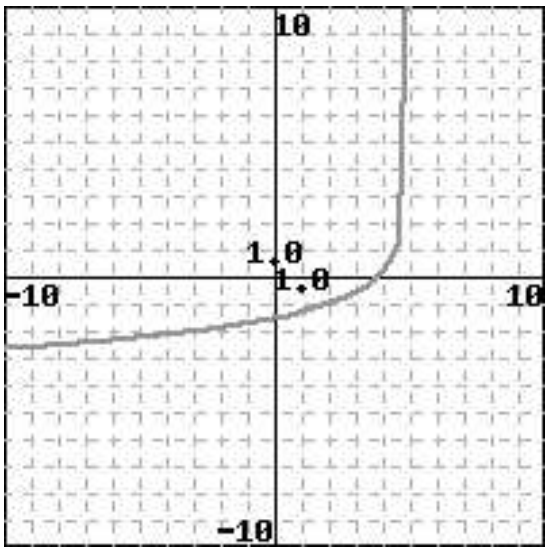
The inverse of the function f is (A, B or C): _____

20.(1 pt) Below is the graph of a function f: (**Click on image for a larger view**)

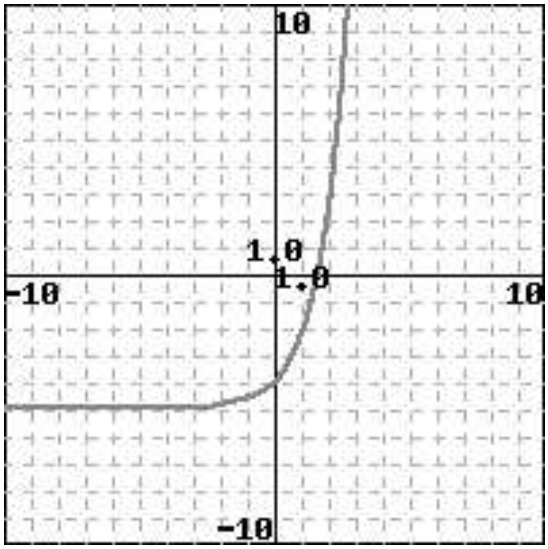




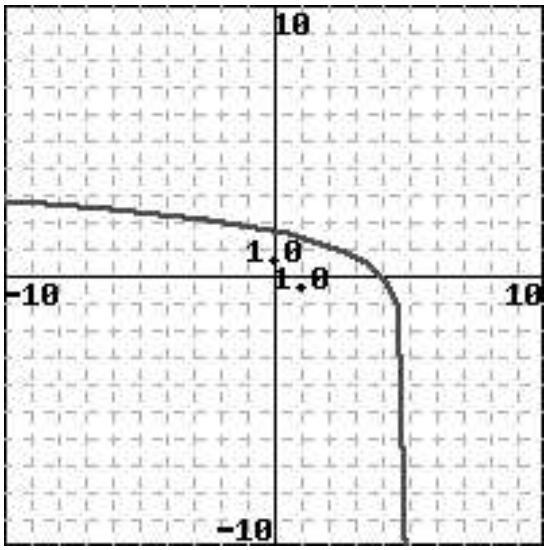
Graph A



Graph B



Graph C



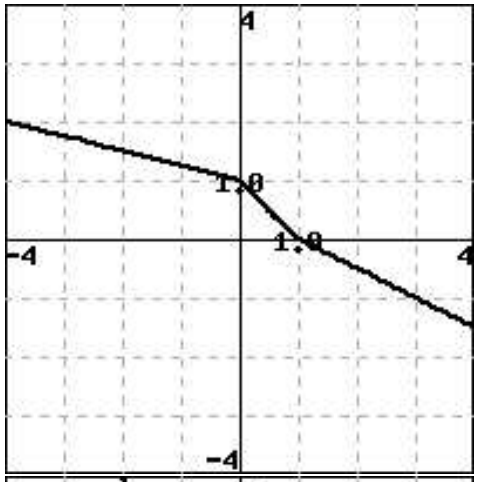
Graph D

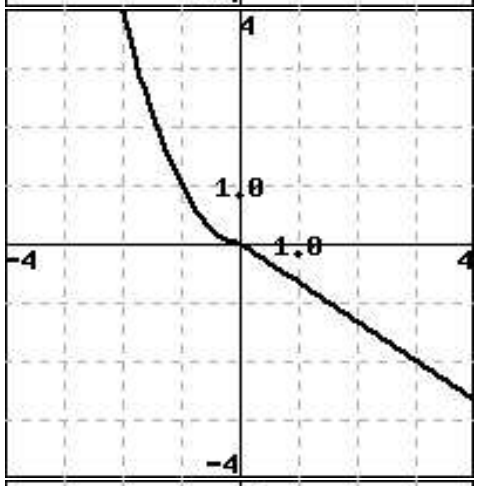
The inverse of the function f is (A, B, C or D): _____

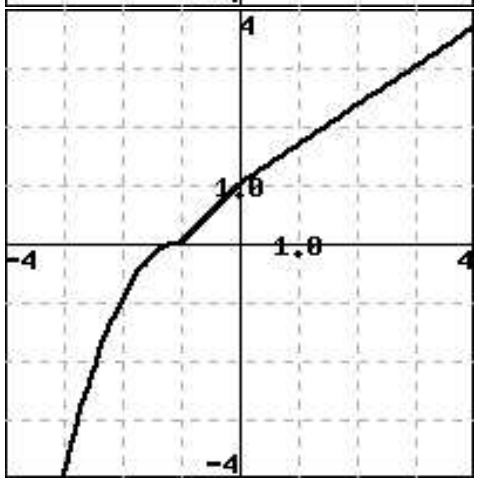
21.(1 pt)

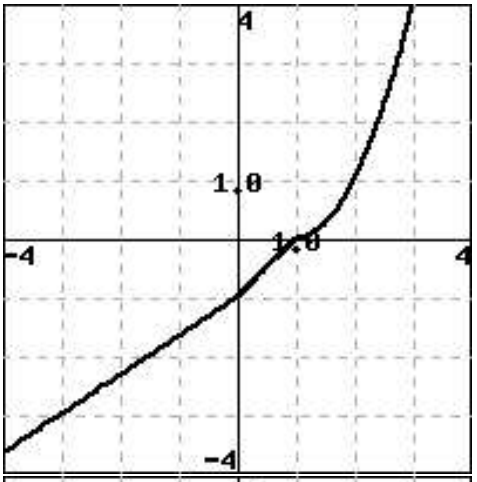
Match each function to its inverse.

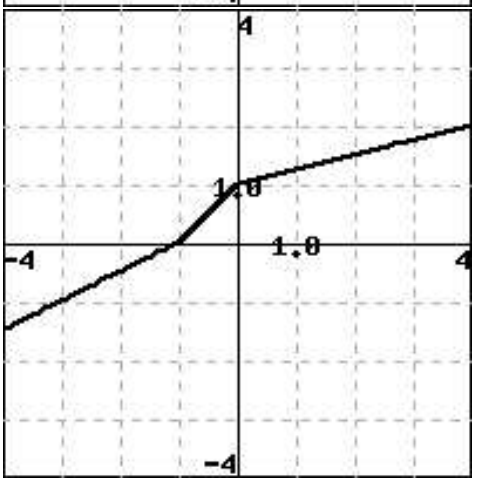
(For all graphs on this page, if you are having a hard time seeing the picture clearly, click on it. It will expand to a larger picture on its own page so that you can inspect it more closely.)

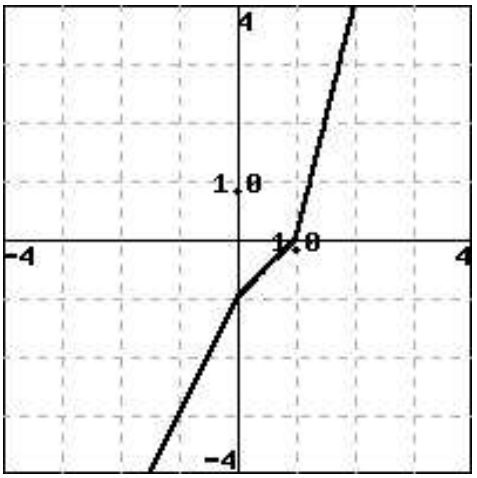
__ 1. 

__ 2. 

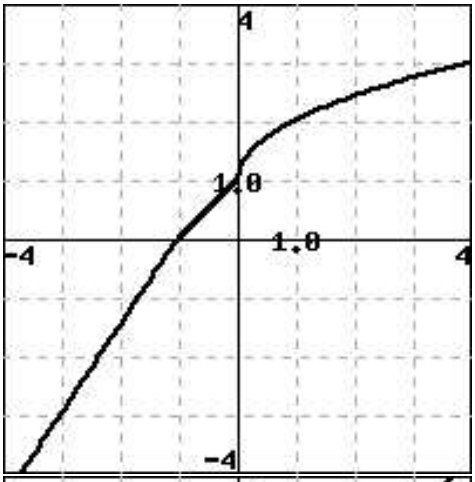
__ 3. 

__ 4. 

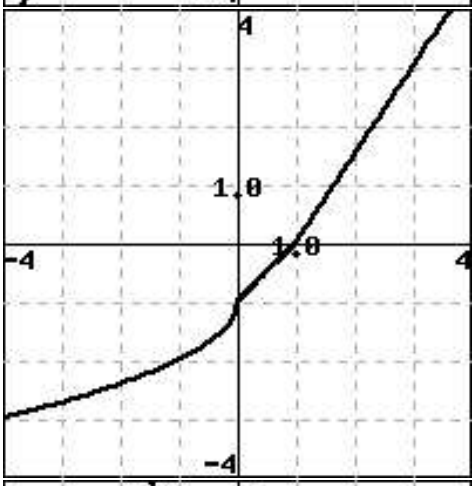
__ 5. 

A. 

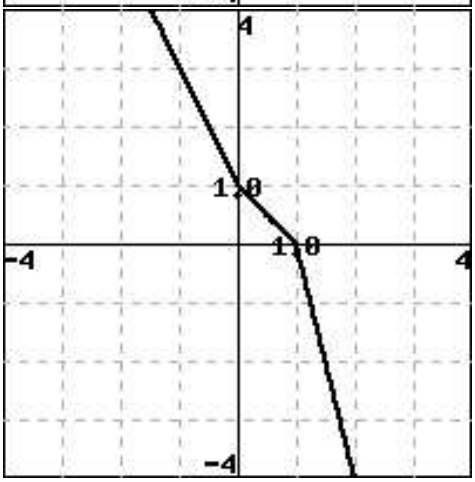
B.



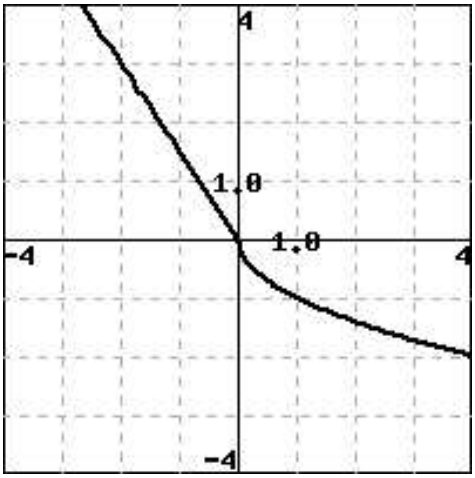
C.



D.



E.

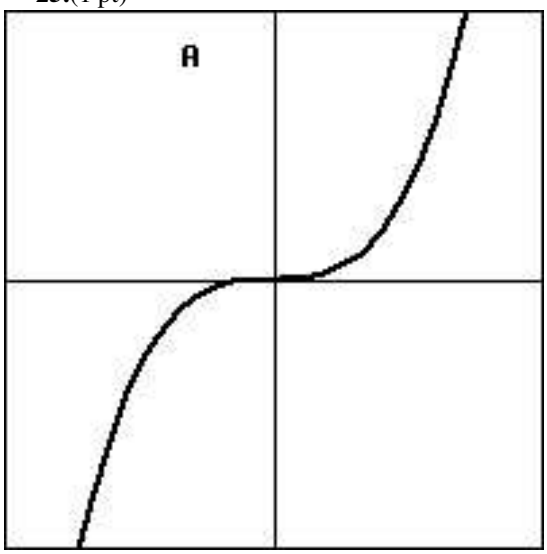


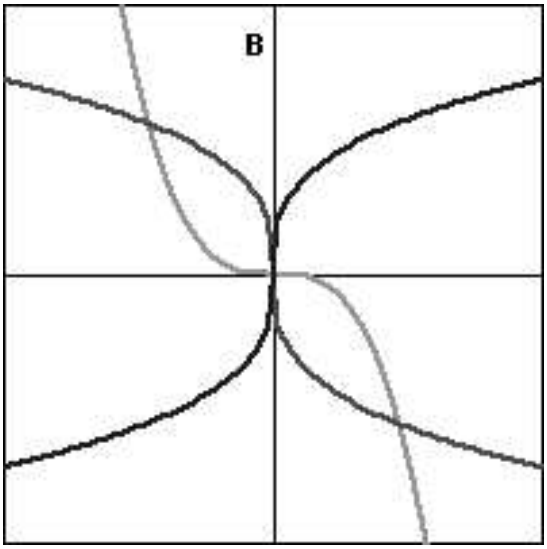
22.(1 pt)
Let $f(x) = -8x + 2$. Find $f^{-1}(x)$.
$f^{-1}(x) =$ _____ .
Now for fun, verify that $(f \circ f^{-1})(x) = (f^{-1} \circ f)(x) = x$

23.(1 pt)
Let $f(x) = \frac{x}{x-9}$. Find $f^{-1}(x)$.
$f^{-1}(x) =$ _____ .
Now for fun, verify that $(f \circ f^{-1})(x) = (f^{-1} \circ f)(x) = x$

24.(1 pt)
Let $f(x) = 2 + \sqrt{x-6}$. Find $f^{-1}(x)$.
$f^{-1}(x) =$ _____ .
Now for fun, verify that $(f \circ f^{-1})(x) = (f^{-1} \circ f)(x) = x$

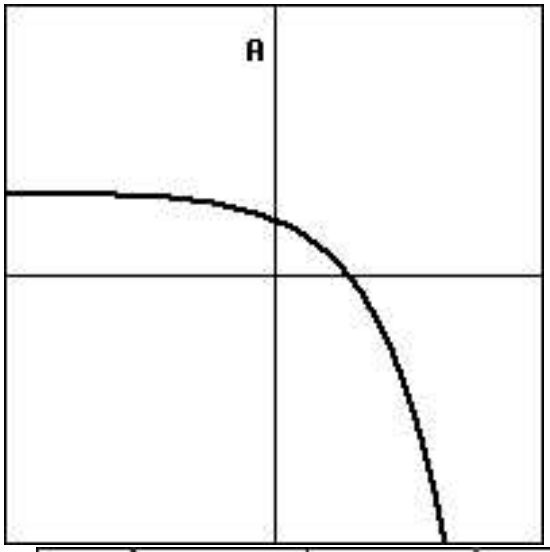
25.(1 pt)

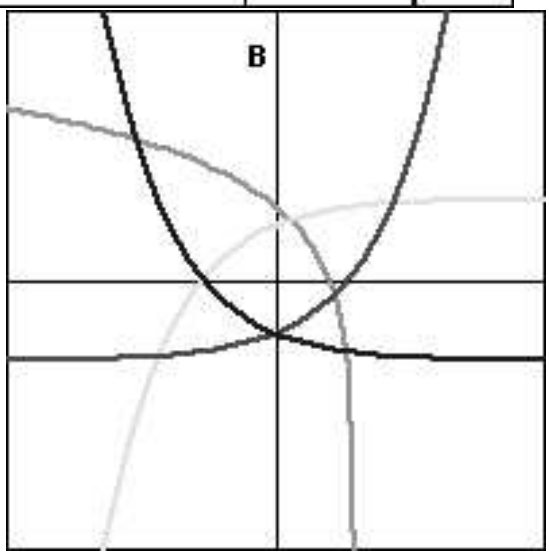




A function $f(x)$ is graphed in plane A. It is clearly a 1:1 function, so it must have an inverse.
Enter the color ("red", "green", or "blue") of this inverse function which is graphed in plane B. Use what you know about the graphs of inverse functions rather than algebraic calculations based on what you might guess the function to be.
Color of f^{-1} graph = _____ Important!! You only have 2 attempts to get this problem right!

26.(1 pt)





A function $f(x)$ is graphed in plane A. It is clearly a 1:1 function, so it must have an inverse.
Enter the color ("red", "green", "blue", or "yellow") of this inverse function which is graphed in plane B. Use what you know about the graphs of inverse functions rather than algebraic calculations based on what you might guess the function to be.
Color of f^{-1} graph = _____ Important!! You only have 2 attempts to get this problem right!