

Practice Test 4
Inverse Functions

Use the three tables of values below to evaluate questions 1–6.

x	$f(x)$
-2	4
2	3
5	-6
0	-3

x	$g(x)$
3	5
4	5
-3	0
5	2

x	$h(x)$
-3	0
-4	0
-5	4
-6	-4

1. $(f \circ g)(3)$

2. $h(f(0))$

3. $(h \circ h)(-6)$

4. $g(h(-5))$

5. $h(f(g(4)))$

6. $(g \circ f \circ g)(5)$

For questions 7–10, let $f(x) = x^2 - 5$, $g(x) = 2x + 3$, and $h(x) = x$. Find an expression for each composition.

7. $g(f(x))$

8. $(f \circ h \circ h)(x)$

9. $(f \circ g)(x)$

10. $g(h(g(x)))$

11. Suppose f is a function such that $f = f^{-1}$. What must $f(f(3x^7))$ equal?

12. Using the words “input” and “output,” explain what the identity function is.

Find the inverse of each function.

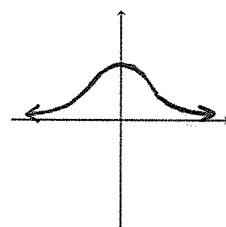
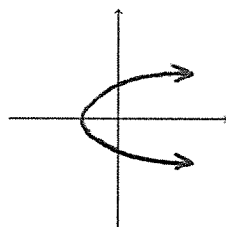
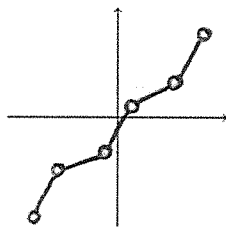
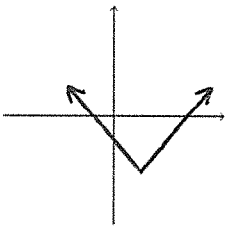
13. $f(x) = -4x$

14. $f(x) = 3x - 2$

15. $f(x) = (x - 7)^5$

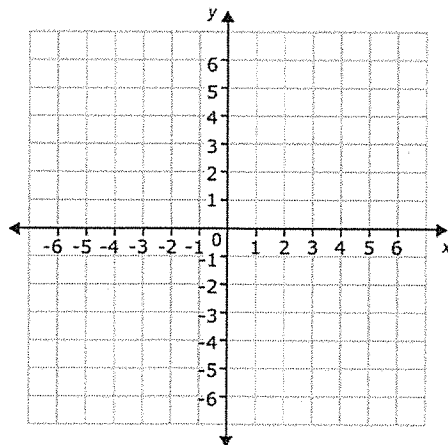
16. $f(x) = \frac{\sqrt[3]{x+4}}{5}$

17. Identify each of the following relations as either "not a function," "function, not one-to-one," or "one-to-one function."



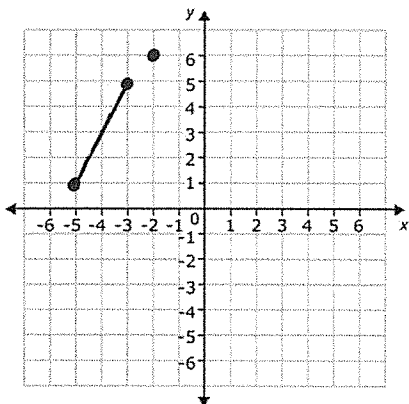
18. a) The domain and range of a function, f , are $D: (-\infty, \infty)$ and $R: -2 < y < 3$. Assuming f is one-to-one, what must the domain and range of f^{-1} be?

b) Graph a function that could possibly be f^{-1} .

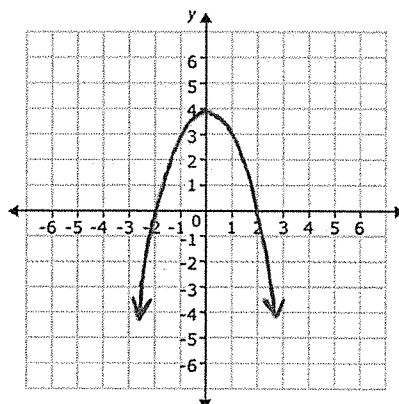


If the functions below have an inverse function, graph it on the same plane as the original function. If an inverse function does not exist, write "no inverse function."

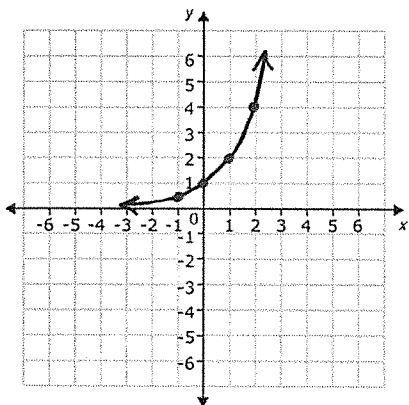
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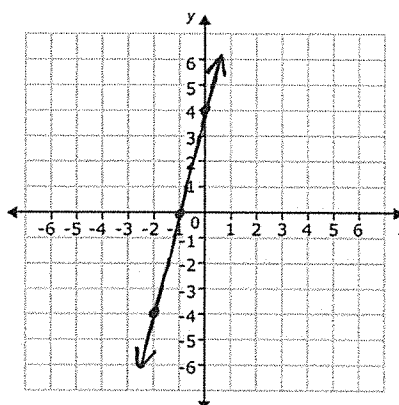
20.



21.



22.



Label each of the following statements as "true" or "false." If a statement is true, explain why it is true. If a statement is false, provide an example that demonstrates that it is false.

23. The only function that is its own inverse is the identity function.

24. An even degree polynomial function is never one-to-one.

25. If $(3, -5)$ is a point on the one-to-one function f , then $(-3, 5)$ must be a point on the function f^{-1} .

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