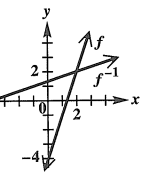
3 **24.** does not; it is not
-one **27.** untying your
ces **28.** stopping a car
aving a room
scending the stairs
winding a tape
nptying a cup
verses **34.** not inverses
t inverses
verses **37.** inverses
t inverses **39.** inverses
t inverses
t inverses **42.** inverses
verses **44.** inverses
6, −3), (1, 2), (8, 5)}

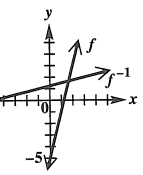
$\left\{(-1,3),(0,5),(5,0),\left(\frac{2}{3},4\right)\right\}$

t one-to-one
t one-to-one
) $f^{-1}(x) = \frac{1}{3}x + \frac{4}{3}$



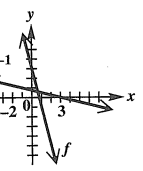
omains and ranges of both f $^{-1}$ are $(-\infty, \infty)$.

) $f^{-1}(x) = \frac{1}{4}x + \frac{5}{4}$



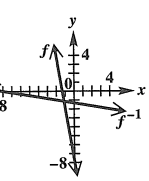
omains and ranges of both f $^{-1}$ are $(-\infty, \infty)$.

a) $f^{-1}(x) = -\frac{1}{4}x + \frac{3}{4}$



omains and ranges of both f $^{-1}$ are $(-\infty, \infty)$.

a) $f^{-1}(x) = -\frac{1}{6}x - \frac{4}{3}$



2. The table shows emissions of a major air pollutant, carbon monoxide, in the United States for the years 1992 through 1998.

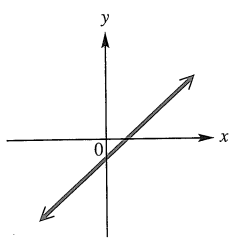
If this correspondence is considered to be a function that pairs each year with its emissions amount, is it one-to-one? If not, explain why.

Year	Amount of Emissions (in thousands of tons)
1992	97,630
1993	98,160
1994	102,643
1995	93,353
1996	95,479
1997	94,410
1998	89,454

Source: U.S. Environmental Protection Agency.

Decide whether each function as defined or graphed is one-to-one. See Examples 1 and 2.

3.



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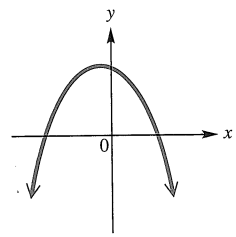

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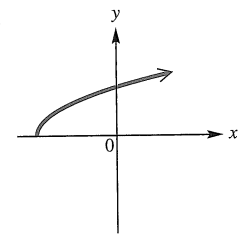

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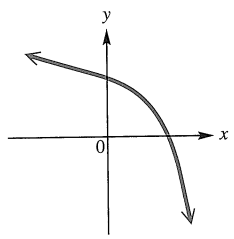

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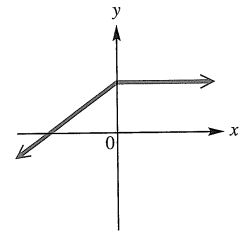
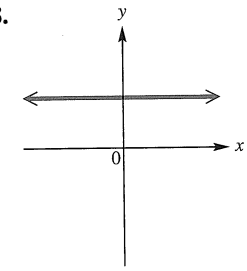


8.



9. $y = (x - 2)^2$

10. $y = -(x + 3)^2 - 8$

11. $y = \sqrt{36 - x^2}$

12. $y = -\sqrt{100 - x^2}$

13. $y = 2x^3 + 1$

14. $y = -\sqrt[3]{x + 5}$

15. $y = \dfrac{1}{x + 2}$

16. $y = \dfrac{-4}{x - 8}$

Concept Check *Answer each of the following.*

17. For a function to have an inverse, it must be _____.

18. If two functions f and g are inverses, then $(f \circ g)(x) =$ _____, and _____ $= x$.

19. The domain of f is equal to the _____ of f^{-1}, and the range of f is equal to the _____ of f^{-1}.

20. If the point (a, b) lies on the graph of f, and f has an inverse, then the point _____ lies on the graph of f^{-1}.

21. True or false: If $f(x) = x^2$, then $f^{-1}(x) = \sqrt{x}$.

22. If a function f has an inverse, then the graph of f^{-1} may be obtained by reflecting the graph of f across the line with equation _____.