

RECALL

If a graph passes the vertical line test, this means the relation is a function.

(NO x coordinates repeat)

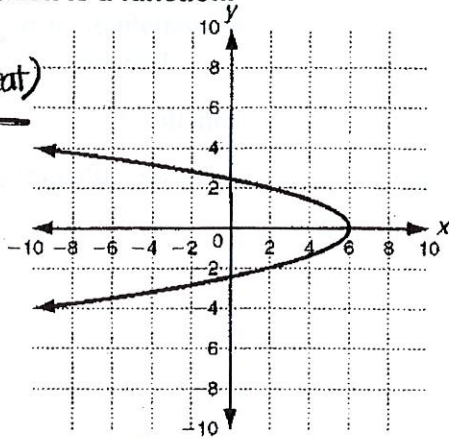
If a graph passes the horizontal line test, the inverse will be a function and we call the function one-to-one.

(NO y coordinates repeat)

LESSON
14-2

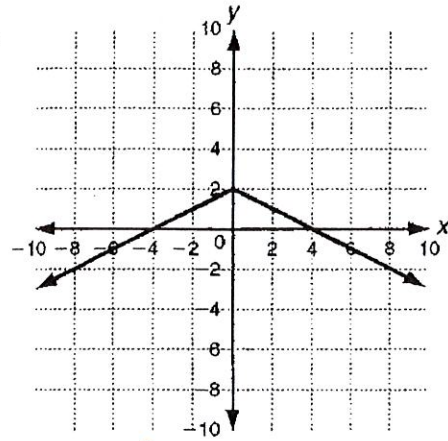
Practice A **KEY!**
Functions and Their Inverses

Use the horizontal line test to determine whether the inverse of each relation is a function.



yes

2.



no

Find the inverse of each function. State whether the inverse is a function.

3. $f(x) = 2x - 6$

- Substitute y for $f(x)$.
- Switch x and y .
- Solve for y . This is the inverse.
- Graph the original function using a graphing calculator. Is the inverse a function?

$$y = 2x - 6$$

$$x = 2y - 6$$

$$y = \frac{x+6}{2} \text{ or } y = \frac{1}{2}x + 3$$

Yes!

4. $g(x) = x + 9$

$$y = x - 9$$

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

$$y = 2x + 2$$

6. $p(x) = x^2 + 1$

$$y = \pm\sqrt{x-1}$$

7. $b(x) = \sqrt{x+7}$

$$y = x^2 - 7$$

Solve.

8. The total cost of a jacket, including 8% tax, can be found by using the function $T(x) = 1.08x$.

- Find the inverse of $T(x)$.
- What does the inverse represent?
- Tia wants to return a jacket. She paid a total of \$102.60 for it. What was the price of the jacket?

$$x = 1.08y \quad y = \frac{x}{1.08}$$

Given final cost, calc. cost before tax

$$102.60 / 1.08 = \$95 \text{ (pre-tax)}$$