

## INVERSE FUNCTIONS (§1.5)

### TWO THINGS TO DO WITH INVERSE FUNCTIONS:

#1: TELL WHETHER OR NOT THE FUNCTION HAS AN INVERSE.

Graphically: A function has an inverse if it passes the horizontal line test.

Algebraically: To SHOW that  $g(x)$  is the inverse of  $f(x)$  you must show that

$$f(g(x)) = x = g(f(x))$$

♫: You should be able to check graphically, but PROVE/SHOW algebraically.

#2: FIND THE INVERSE FUNCTION IF IT EXISTS.

Graphically: Find a few ordered pairs on the function, switch the  $x$  and  $y$ -values and graph the reversed ordered pairs. The graph connecting the new points is the graph of the inverse function.

Algebraically: First, switch  $x$  and  $y$ . Second, solve the new equation for  $y$  in terms of  $x$ . The equation you get is the inverse function.

♪: You should be able to check graphically, but PROVE/SHOW algebraically.