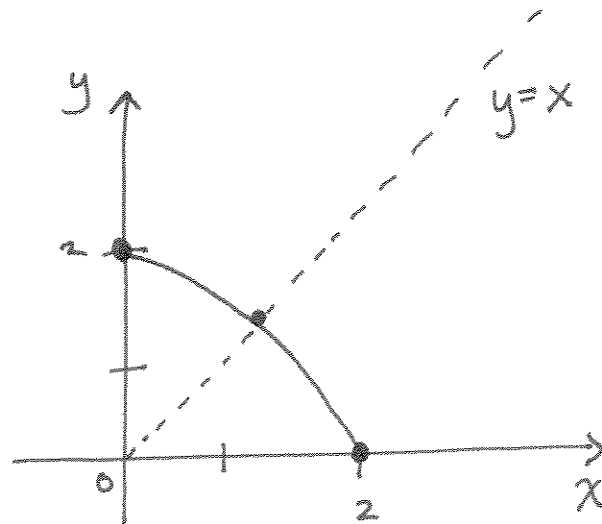


- (3) (5 Points) Find the inverse function of f . Then sketch the graphs of f and f^{-1} .
 $f(x) = \sqrt{4-x^2}$, for $0 \leq x \leq 2$

$$f(x) = \sqrt{4-x^2} \quad 0 \leq x \leq 2$$

plot $f(x)$:

x	$f(x)$
0	2
1	$\sqrt{3}$
2	0



find inverse:

$$y = \sqrt{4-x^2}$$

switch
 $x \leftrightarrow y$

$$x = \sqrt{4-y^2}$$

solve for y

$$x^2 = 4-y^2$$

$$x^2 - 4 = -y^2$$

$$4 - x^2 = y^2$$

$$\pm \sqrt{4-x^2} = y$$

$$y = f^{-1}(x) = \pm \sqrt{4-x^2}$$

on the interval $0 \leq x \leq 2$, $f(x) = f^{-1}(x)$ as we can see by looking at the graph
 note: on the interval $-2 \leq x \leq 2$, $f(x)$ is not one-to-one and therefore has no inverse.