

3. Given  $f(x) = -x^2 - 4$

a. Find the domain and range of  $f(x)$ .

$D: \text{all reals} \quad R: [-\infty, -4]$

b. Find  $f^{-1}(x)$

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

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

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

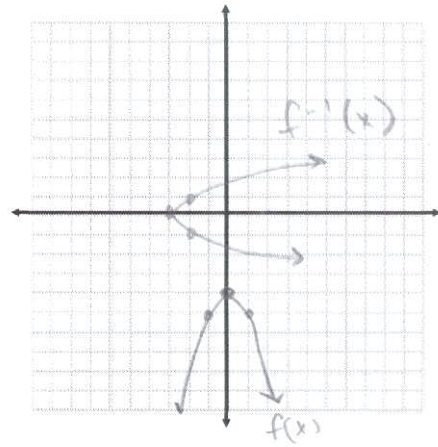
c. Find the domain and range of  $f^{-1}(x)$ .

$D: (-\infty, -4] \quad R: \text{all reals}$

d. Is  $f^{-1}(x)$  a function?

no

e. Graph BOTH  $f(x)$  and  $f^{-1}(x)$ .



4. Given  $f(x) = \sqrt{8-x}$

a. Find the domain and range of  $f(x)$ .

$D: (-\infty, 8] \quad R: [0, \infty)$

b. Find  $f^{-1}(x)$

$$y = \sqrt{8-x} \quad y^2 = 8-x \quad y^2 - 8 = -x \quad x = 8 - y^2$$

$$f^{-1}(x) = 8 - x^2$$

c. Find the domain and range of  $f^{-1}(x)$ .

$D: [0, \infty) \quad R: (-\infty, 8]$

d. Is  $f^{-1}(x)$  a function?

yes

e. Graph BOTH  $f(x)$  and  $f^{-1}(x)$ .

