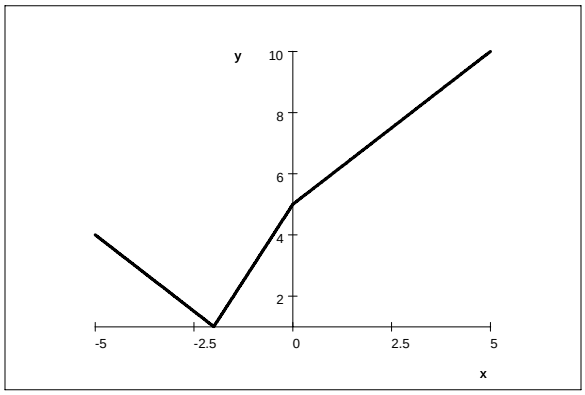
1. Let f be the function graphed below:



- **a.** Does f have an inverse in the domain of $[-4,4]$? Explain.
- **b.** If we restrict the domain of f to be $[-2,2]$, does f^{-1} exist? Explain.
- **c.** If $f(-2) = 1$, $f(-1) = 3$ and $f(2) = 7$, find $f^{-1}(1)$, $f^{-1}(3)$ and $f^{-1}(7)$.

2. If $f(x) = -\sqrt{x-2} + 1$

- **a.** Does f^{-1}exist?
- **b.** Find the inverse of f.
- **c.** Sketch $y = f(x)$ and $y = f^{-1}(x)$ together if f^{-1} exists; otherwise sketch $y = f(x)$ only.

3. If $h(x) = (3x-1)^{-2}$, find two functions f and g so that $h = f \circ g$.

4. If $h(x) = \sqrt{(3x-1)}$, find two functions f and g so that $h = f \circ g$.

5. Suppose $f(x) = \sqrt{x}$.

- **a.** Find the function g so that $y = g(x)$ is a reflection of f with respect to $y - axis$.
- **b.** Find the inverse function for g.
- **c.** Graph the functions g and g^{-1} together.

6. If $f(x) = \frac{3}{5}x - 1$,

- **a.** explain why f has an inverse function..
- **b.** find the inverse function, f^{-1},
- **c.** check if $f(f^{-1}(x)) = f^{-1}(f(x)) = x$,
- **d.** graph f, and f^{-1} together.

7. If $f(x) = \sqrt{x+1}$ and $g(x) = 2x^2 - 3$. Find

- **a.** $(f \circ g)(1)$
- **b.** $(g \circ f)(1)$
- **c.** $(f \cdot g)(1)$.

8. Let $f(x) = x^3$,

- **a.** find the function g so that $y = g(x)$ is a reflection of f with respect to the $x - axis$;
- **b.** find the function h so that $y = h(x)$ is a shifting of $y = f(x)$ left 3 units and down 3 units.
- **c.** does h have an inverse? If so, sketch $y = h(x)$ and $y = h^{-1}(x)$

together.