

1. Let $f(x) = \frac{1}{x}$ and $g(x) = \sqrt{x-2}$.

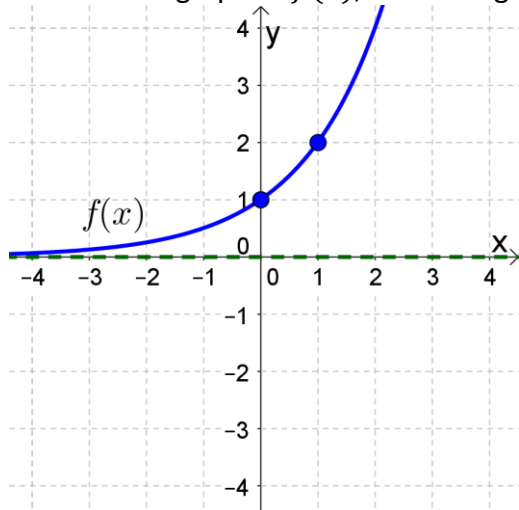
a) Find $(g \circ f)\left(\frac{1}{2}\right)$.

b) Find $f \circ g$ and its domain.

c) Find $g \circ f$ and its domain.

2. Find the inverse of $f(x) = 2 + \sqrt{x-3}$. Be sure to state the domain of $f^{-1}(x)$. (Hint: the domain of f^{-1} is the range of f)

3. Given the graph of $f(x)$, draw the graph of $f^{-1}(x)$.



Q: What word starts with "e" and has only one letter in it?

4. Let $f(x) = \frac{x}{x-1}$ and $g(x) = x^2 - 3$.

a) Find $(f \circ g)(0)$.

b) Find $(f \circ g)(2)$.

c) Find $(g \circ g)(3)$.

d) Find $f \circ g$ and its domain.

e) Find $g \circ f$ and its domain.

- f) Find $f \circ f$ and simplify it. Based on what you got for $f \circ f$, what can you say about the inverse of f ?

5. Let $f(x) = \sqrt{x - 2}$ and $g(x) = 1 - 2x$.

a) Find $(f \circ g)(0)$.

b) Find $(f \circ g)(-5)$.

c) Find $(f \circ f)(11)$.

d) Find $f \circ g$ and its domain.

e) Find $g \circ f$ and its domain.

f) Find $f \circ f$ and its domain.

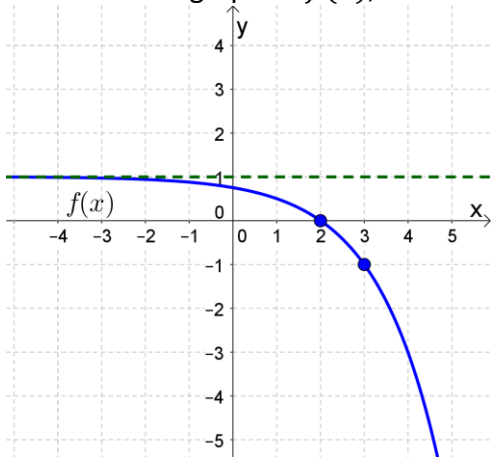
6. Show that $f(x) = \frac{1}{x-1}$ and $g(x) = \frac{1}{x} + 1$ are inverses of each other.

7. Show that $f(x) = x^3 + 4$ and $g(x) = \sqrt[3]{x-4}$ are inverses of each other.

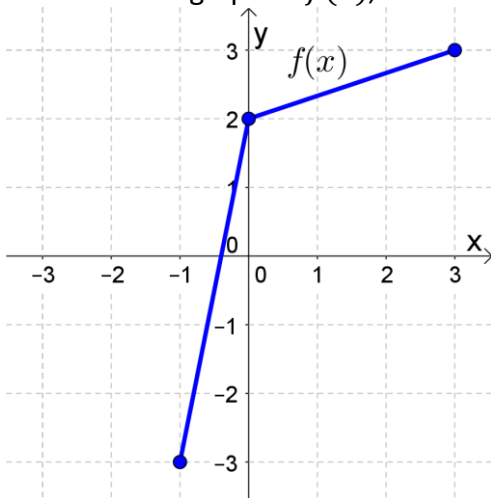
8. Find the inverse of $f(x) = \frac{x-1}{2x+3}$. Be sure to state the domain of $f^{-1}(x)$.

9. Find the inverse of $f(x) = 9 - x^2$, $x \geq 0$. Be sure to state the domain of $f^{-1}(x)$.

10. Given the graph of $f(x)$, draw the graph of $f^{-1}(x)$.



11. Given the graph of $f(x)$, draw the graph of $f^{-1}(x)$.



Optional exercises from the Sullivan book if you'd like more practice:

5.1 (p.254) #13-37 odd, 47-51 odd

5.2 (p.265) #21-25 odd, 35-49 odd, 51-61 odd (parts a and b only), 63-71 odd