

§P.9 & P.10: Function Composition and Inverse Functions

1.] Let $f(x) = \sqrt{x+4}$ and $g(x) = x^2$. Find expressions for the new functions below:

a.) $(f \circ g)(x)$

b.) $(g \circ f)(x)$

2.] Let $f(x) = \frac{1}{x}$ and $g(x) = x^2 + 3$. Find expressions for the new functions below:

a.) $(f \circ g)(x)$

b.) $(g \circ f)(x)$

c.) $(g \circ g)(x)$

d.) $(f \circ f)(x)$

3.] For each function $h(x)$ below, find two functions $f(x)$ and $g(x)$ such that $h(x) = (f \circ g)(x)$.

a.) $h(x) = (2x + 1)^2$

b.) $h(x) = \sqrt[3]{x^2 - 4}$

4.] Find the inverse function of $f(x) = 3x + 1$ and verify that $f(f^{-1}(x)) = x$ and $f^{-1}(f(x)) = x$.

5.] Find the inverse function of $f(x) = 1 - x^3$.

6.] Let $f(x) = \sqrt{2+x}$. The graph of $f(x)$ is below. Find the inverse function $f^{-1}(x)$ and sketch it on the graph below. Find the domain and range of f and f^{-1} .

