

Math 111 Last Quiz (for practice)

1. True or False

(a) $f \circ g = g \circ f$ for any functions f and g .

(b) If f and g are one-to-one functions then $f \circ g \circ f^{-1} = g$.

(c) If f and g are one-to-one functions and we know $f(3) = 5$ and $g(7) = 3$ then $(f + g^{-1})(3) = 12$.

2. Let $f(x) = \frac{1}{x+3}$. Find $f^{-1}(x)$ and verify your answer is correct using the round trip theorem.

3. Let $f(x) = \log(x)$, $g(x) = \frac{1}{x}$, $h(x) = x + 2$. Write k as a composition of f , g , and h where

$$k(x) = \frac{1}{\log(x+2)}$$

4. Let $f(x) = x^4$, $g(x) = \ln(6x)$, $h(x) = 3 + x$.

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

(b) Find $(g/h)(x)$ and give the domain of g/h .

(c) Compute $(h \circ f \circ h)(-4)$.

5. Let $f(x) = \log_3(x)$ and $g(x) = x - 7$. Compute

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