


Write your questions
and thoughts here!



Finding a Composed Function

1. Let $f(x) = x^2 - 1$ and $g(x) = \sqrt{x}$. Find the function $h(x) = f(g(x))$.

2. Let $f(x) = 2x - x^2$ and $g(x) = x + 1$. Find the function $h(x) = f(g(x))$.

Domain of a Composed Function

To find the domain of a composed function $f(g(x))$, we have two restrictions to consider.

1. First, since we are using $g(x)$ as an input, we can only use x -values that are in the domain of g .
2. Second, the output of $g(x)$ must be in the domain of $f(x)$. To check this, we look at the new function $f(g(x))$. Any restrictions on the domain of $f(g(x))$ must also be included.

Use problem #1 and find the domain of $h(x)$.

3. Let $f(x) = \sqrt{x - 1}$ and $g(x) = x^2 - 8$.

a. Find $f \circ g$, then state the domain.

b. Find $g(f(x))$, then state the domain.

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Decomposition of Functions

Functions given analytically can often be decomposed into less complex functions.

Decompose the following functions as $h(x) = f(g(x))$.

4. $h(x) = \sqrt{x^3 + 1}$

$f(x) =$

$g(x) =$

5. $h(x) = \frac{1}{x^2+1}$

$f(x) =$

$g(x) =$

2.7B Composition of Functions (Part 2)

AP Precalculus

2.7B Practice

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

1. Find $f \circ g$

2. State the domain of $f \circ g$

3. Find $g \circ f$

4. State the domain of $g \circ f$

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

5. Find $f \circ g$

6. State the domain of $f \circ g$

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

7. Find $g \circ f$

8. State the domain of $g \circ f$

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

9. Find $f \circ g$

10. State the domain of $f \circ g$

11. Find $g \circ f$

12. State the domain of $g \circ f$

Express h as a composition of two simpler functions f and g where $h(x) = f(g(x))$.

13. $h(x) = (2x - 7)^4$

$f(x) =$

$g(x) =$

14. $h(x) = \frac{4}{\sqrt{x+3}}$

$f(x) =$

$g(x) =$

15. $h(x) = e^{x^3}$

$f(x) =$

$g(x) =$

16. $h(x) = \sqrt{x^2 - x}$

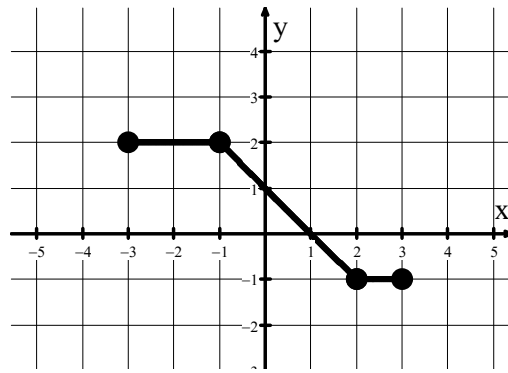
$f(x) =$

$g(x) =$

2.7B Composition of Functions (Part 2)

17. Given that $f(x) = cx - 3$ and $g(x) = cx + 5$ are both defined on the set of all real numbers and c is a constant, what is the value of c if $(f \circ g)(x) = (g \circ f)(x)$ for all values of x ?

18. The piecewise-linear function f , defined on $-3 \leq x \leq 3$, is shown in the graph. The function g is given by $g(x) = x - 2$. Sketch a graph of $y = f(g(x))$.

Graph of f