

Write your questions
and thoughts here!

The **composition of functions** means we take one function and substitute it into the other function. $f(g(x))$ is read as f of g of x . It means the output of $g(x)$ is used as the input for $f(x)$.

1. Let $f(x) = x^2 - 4$ and $g(x) = 3 - x$.
- a. Find $f(g(5))$. b. Find $g(f(5))$.

$f(g(x))$ can also be written as _____

Use the table to find the values of the composed functions below.

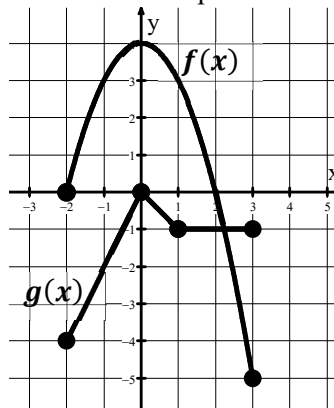
x	$f(x)$	$g(x)$
-5	3	-2
-3	0	7
-2	3	-5
0	2	3
2	-3	0
3	2	6

3. $f(g(0))$

4. $f \circ g(-2)$

5. $g \circ f(2)$

Use the graphs of f and g to find the values of the composed functions.



6. $f(g(1))$

7. $g(f(-2))$

8. $g \circ f(1)$

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Recall: The additive identity is 0. Any number + 0 gives you the same number.

Recall: The multiplicative identity is 1. Any number * 1 gives you the same number.

Identity Function

The identity function is $f(x) = x$. $f(x) = x$ composed with any function g is the same function g .

$$\text{If } f(x) = x, \text{ then } f(g(x)) =$$

2.7A Composition of Functions (Part 1)

AP Precalculus

2.7A Practice

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

1. Find $(f \circ g)(-2)$.

2. Find $f(g(2))$.

3. Find $g(f(8))$.

Let $f(x) = 4^x$ and $g(x) = x - x^2$.

4. Find $f(g(-1))$.

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

6. Find $(g \circ f)(-1)$.

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

7. Find $(f \circ g)(-1)$.

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

9. Find $g(f(2))$.

10. Let $f(x) = 1 - 2x$ and $h(x) = f(g(x))$. Fill in the table.

x	$g(x)$	$h(x)$
-3	-2	
-1	1	
0	2	

11. Let $g(x) = 3^x$ and $h(x) = g(f(x))$. Fill in the table.

x	$f(x)$	$h(x)$
1	-2	
3	0	
5	1	

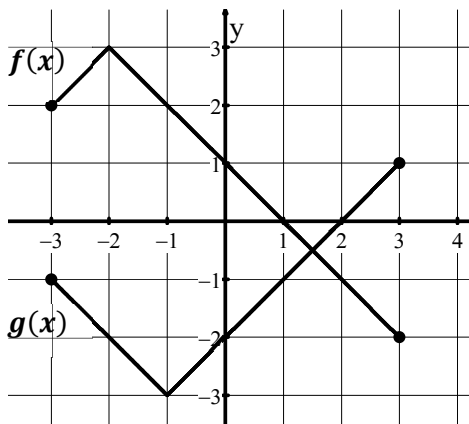
12. Let $f(x) = x^2 - 4x$ and $h(x) = f(g(x))$. Fill in the table.

x	$g(x)$	$h(x)$
-5	1	
-3	2	
-1	-2	

13. Fill in the following table, given that $h(x) = f(g(x))$.

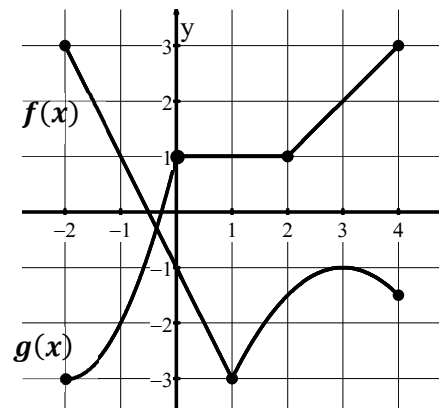
x	$g(x)$	$f(x)$	$h(x)$
-3	0	7	
-2	-2	-4	
-1	-3	-1	
0	1	3	
1	2	0	
2	3	4	
3	-1	9	

14. Use the graph to find the each value.



- Find $f(g(-2))$.
- Find $f \circ g(0)$.
- Find $g(f(3))$.

15. Use the graph to find the each value.



- Find $f(g(0))$.
- Find $g(f(3))$.
- Find $g \circ f(-2)$.

2.7A Composition of Functions (Part 1)

2.7A Test Prep

16. Given $f(x) = 5x - 2b$ while $g(x) = 4bx$. If $f(g(1)) = 36$, what is $g(f(1))$?