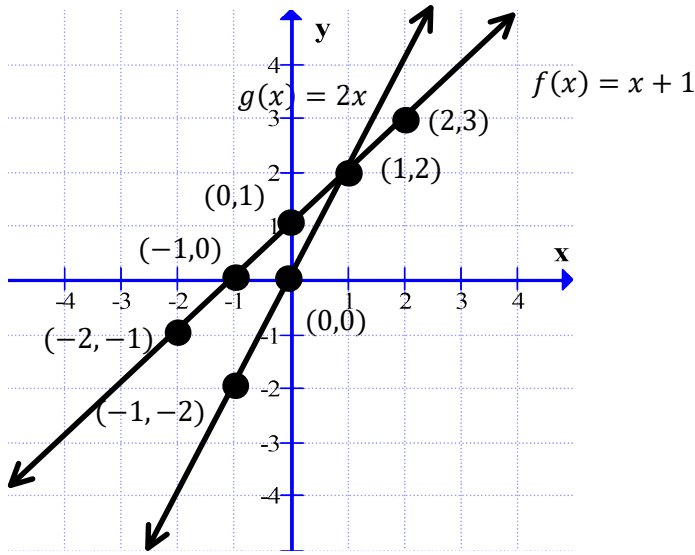


C12 - 10.2 - Composite Function Notes

outside(inside)



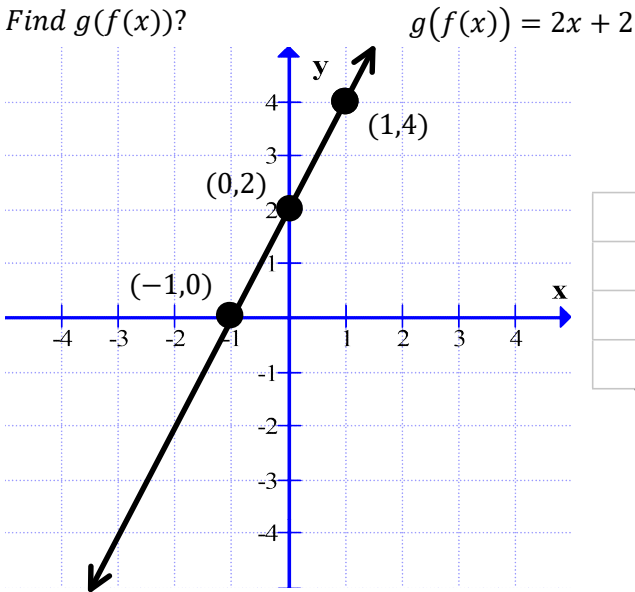
$$f(x) = x + 1$$

x	f(x)
-1	0
0	1
1	2

$$g(x) = 2x$$

x	g(x)
-1	-2
0	0
1	2

Find $g(f(x))$?



$$g(x) = 2x$$

$$g(f(x)) = 2f(x)$$

$$g(x + 1) = 2(x + 1)$$

$$g(f(x)) = 2x + 2$$

Outside Function

Put $f(x)$ into g 's x .
 $g(f(x)) = 2(x + 1)$

x	f(x)
-1	0
0	1
1	2

f(x)	g(f(x))
0	0
1	2
2	4

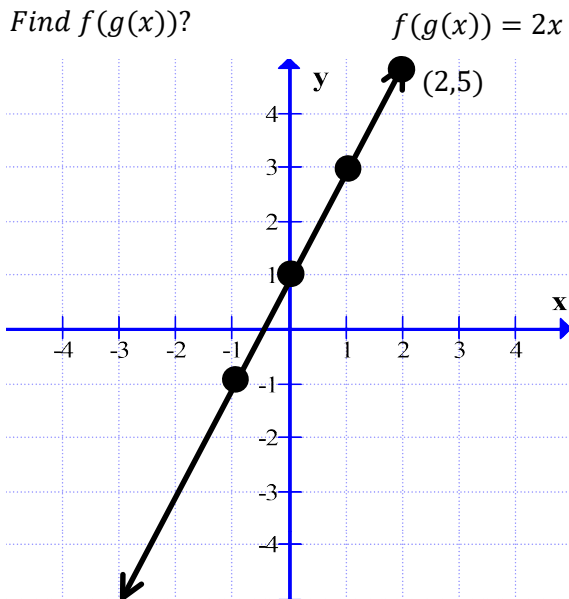
$g(-1) = 0$

$g(0) = 2$

$g(1) = 4$

x	g(f(x))
-1	0
0	2
1	4

Find $f(g(x))$?



$$f(x) = x + 1$$

$$f(g(x)) = g(x) + 1$$

$$f(2x) = 2x + 1$$

$$f(g(x)) = 2x + 1$$

Outside Function
Put $g(x)$ into f 's x .
 $f(g(x)) = 2x + 1$

Find $f(g(2))$. OR $f(g(x)) = 2x + 1$

$g(x) = 2x$ $f(g(2)) = 2(2) + 1$

$g(2) = 2(2)$ $f(g(2)) = 5$

$g(2) = 4$

Find $g(2)$

Find $f(4)$

$f(x) = x + 1$

$f(4) = 4 + 1$

$f(4) = 5$

Find $f(g(x))$

Put 2 in for x

$f(g(2)) = 5 \rightarrow (2, 5)$

C12 - 10.2 - Composite Function Notes

outside(inside)

Find $f(x)$ and $g(x)$ if:

$$f(g(x)) = (x - 1)^2$$

$$g(x) = ?$$

$$f(x) = ?$$

outside(inside)

$$g(x) = (x - 1)$$

$$f(x) = x^2$$

$$f(x) = x^2$$

$$f(g(x)) = (g(x))^2$$

$$f(x - 1) = (x - 1)^2$$

$$g(x) = \textit{inside}$$

$$f(x) = \textit{outside}$$

Or

$$g(x) = x$$

$$f(x) = (x - 1)^2$$

cheeky

$$f(g(x)) = x^2 - 6x + 9$$

$$f(g(x)) = (x - 3)(x - 3)$$

$$f(g(x)) = (x - 3)^2$$

$$g(x) = x - 3$$

$$f(x) = x^2$$

$$f(g(x)) = x^2 - 6x + 13$$

$$f(g(x)) = (x - 3)^2 + 4$$

$$g(x) = x - 3$$

$$f(x) = x^2 + 4$$
