

10/9 Notes

Composition of functions: putting 1 function into another & solving

vocab: $f(g(x))$ always work inside, out

$\underbrace{\hspace{10em}}$
 inner function
 $\underbrace{\hspace{10em}}$
 outer function

algebraically ex $f(x) = 2x + 3$ $g(x) = x^2$

a) find $f(g(2))$

first you do $g(2) = 2^2 = 4$

then replace $g(2)$ with 4 so...

$$f(4) = 2(4) + 3 = 11$$

$$\text{so } \boxed{f(g(2)) = 11}$$

b) $f(\underbrace{g(-3)}_9)$

$$f(9) = 2(9) + 3 = 18 + 3 = 21$$

$$\boxed{f(g(-3)) = 21}$$

c) $g(\underbrace{f(2)}_7)$

$$g(7) = 7^2 = 49$$

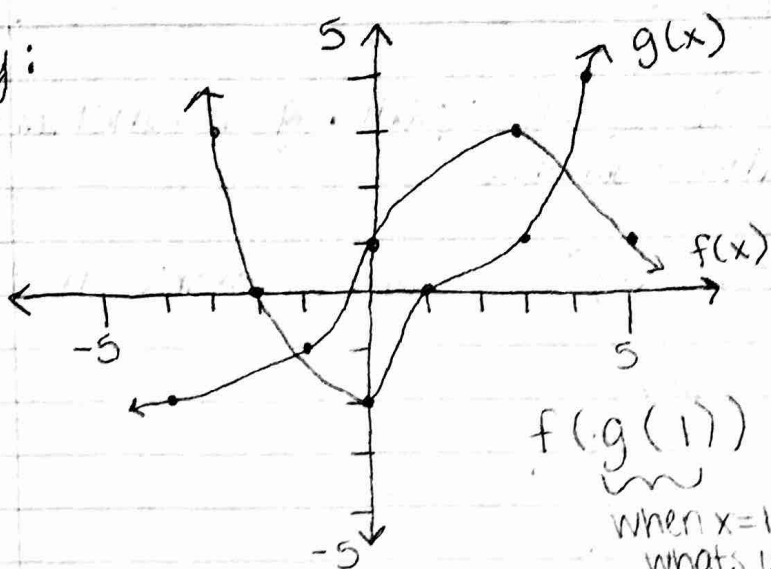
$$\boxed{g(f(2)) = 49}$$

d) $f(\underbrace{g(x)}_{x^2})$

$$f(x^2) = 2x^2 + 3$$

$$\boxed{f(g(x)) = 2x^2 + 3}$$

graphically:



$$f(g(1))$$

when $x=1$
what's y ? $g(1)=0$

$$f(0) = 1$$

$$f(g(1)) = 1$$