

Algebra 2

Ch. 7 Handout 7.6

Function Operations

Composition of Functions

The composition of function g with function f is written as $g \circ f$ and is defined as $(g \circ f)(x) = g(f(x))$.

1. Evaluate the inner function $f(x)$ first
2. Then use your result as the input of the outer function $g(x)$

3. Let $f(x) = x - 2$ and $g(x) = x^2$. Find $(g \circ f)(-5)$ and $(f \circ g)(-3)$.

$$(g \circ f)(-5) = g(f(-5)) = g(-7) = (-7)^2 = 49$$

$$f(-5) = -5 - 2 = -7$$

$$\boxed{g(f(-5)) = 49}$$

$$f(x) = x - 2 \quad \text{and} \quad g(x) = x^2$$

$$(f \circ g)(-3) = f(g(-3)) = f(9) = 9 - 2 = 7$$

$$g(-3) = (-3)^2 = 9$$

$$\boxed{f(g(-3)) = 7}$$

4. Let $f(x) = x^3$ and $g(x) = x^2 + 7$. Find $(g \circ f)(2)$.

$$(g \circ f)(2) = g(f(2)) = g(8) = (8)^2 + 7 = 64 + 7 = 71$$

$$f(2) = (2)^3 = 8$$

$$\boxed{g(f(2)) = 71}$$

$$h(x) = x + 1, k(x) = x^2 + 2x - 4, \text{ find } (k \circ h)(a)$$

$$(k \circ h)(a) = k(h(a)) = k(a+1) = (a+1)^2 + 2(a+1) - 4$$

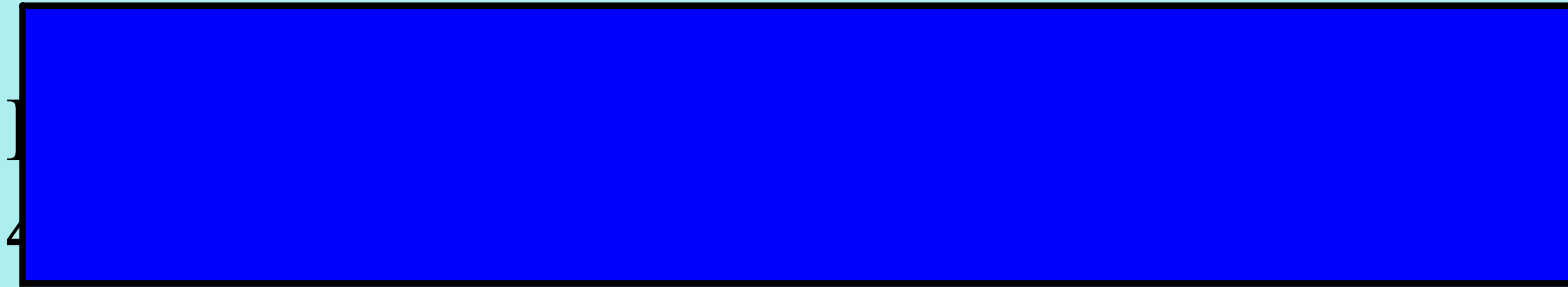
$(a+1)(a+1)$

$$h(a) = a + 1$$

$$a^2 + \underline{2a} + \underline{1} + \underline{2a} + \underline{2} - \underline{4}$$

$$\boxed{k(h(a)) = a^2 + 4a - 1}$$

Assignment:



Day 2: Pgs 400-404 22-42, 58-68 evens
(skip 62)