

6.1 Operations on Functions

Honors Algebra 2

1. Given $f(x) = x^2 - 4$ and $g(x) = 2x + 1$, find each function. Indicate any restrictions in the domain.

a. $(f + g)(x)$

c. $(f \cdot g)(x)$

b. $(f - g)(x)$

d. $\left(\frac{f}{g}\right)(x)$

2. Given $f(x) = x^2 + 7x + 12$ and $g(x) = 3x - 4$, find each function. Indicate any restrictions in the domain.

a. $(f + g)(x)$

b. $(f - g)(x)$

c. $(f \cdot g)(x)$

d. $\left(\frac{f}{g}\right)(x)$

Composition of Functions:

Suppose f and g are functions such that the range of g is a _____ of the domain of f . Then the composition function $f \circ g$ can be described by: $[f \circ g](x) = f[g(x)]$

3. For each pair of functions, find $[f \circ g](x)$ and $[g \circ f](x)$, if they exist. State the domain and range for each composed function.

a. $f = \{(1, 8), (0, 13), (15, 11), (14, 9)\}$
 $g = \{(8, 15), (5, 1), (10, 14), (9, 0)\}$

b. $f = \{(3, -2), (-1, -5), (4, 7), (10, 8)\}$
 $g = \{(4, 3), (2, -1), (9, 4), (3, 10)\}$

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c. $f(x) = 2a - 5$ and $g(x) = 4a$

d. $f(x) = x^2 + 2$ and $g(x) = x - 6$

e. $f(x) = -3x$ and $g(x) = -x + 8$

f. $f(x) = x - 4$ and $g(x) = x^2 - 10$

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

4. If $f(x) = 5x$ and $g(x) = -2x + 1$, and $h(x) = x^2 + 6x + 8$, find each value:
- $g[h(3)]$

b. $h[g(2)]$

c. $f[h(a + 4)]$