

Pre-Calculus 12 Combining Functions Algebraically

Recall:

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

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

$$h(x) = f(x) \cdot g(x)$$

$$h(x) = \frac{f(x)}{g(x)}, \text{ where } g(x) \neq 0$$

Example 1: Sum of Functions

- a) Given $f(x) = -x - 5$ and $g(x) = (x + 3)^2$, write an explicit equation for $h(x) = f(x) + g(x)$.

- b) Determine the domain of $h(x)$.

- c) Evaluate $h(-2)$.

Example 2: Difference of Functions

a) Given $f(x) = x^2$ and $g(x) = 2x + 1$, write an explicit equation for $h(x) = f(x) - g(x)$.

b) Evaluate $h(3)$.

Example 3: Product of Functions

Given $f(x) = 2x - 1$ and $g(x) = x^2 + 4$, write an explicit equation for $h(x) = f(x) \cdot g(x)$.

Example 4: Quotient of Functions

a) Given $f(x) = x^2 + x - 6$ and $g(x) = 2x + 6$, write an explicit equation for $h(x) = \frac{f(x)}{g(x)}$.

b) State the domain of $h(x)$.

c) Write an explicit equation for $h(x) = \frac{g(x)}{f(x)}$.

Example 5: Given $p(x) = x^2 - 9$, write the explicit equations for two functions $f(x)$ and $g(x)$ so that $p(x) = f(x) \cdot g(x)$.