

Functions

Let $f(x) = x+1$ and $g(x) = x-1$.

Additive Property: $(f + g)(x) = f(x) + g(x) = (x+1) + (x-1) = x+1 + x-1 = 2x$.

Subtraction Property: $(f - g)(x) = f(x) - g(x) = (x+1) - (x-1) = x+1 - x+1 = 2$.

Multiplicative Property: $(f \cdot g)(x) = f(x) \cdot g(x) = (x+1)(x-1) = x^2 + x - x - 1 = x^2 - 1$

Division Property: $(f/g)(x) = f(x)/g(x) = \frac{x+1}{x-1} = 1 + \frac{2}{x-1}$

Let $f(x) = x+1$ and $g(x) = x^2 - 1$.

Composition: $(f \circ g)(x) = f(g(x)) = f(x^2 - 1) = (x^2 - 1) + 1 = x^2 - 1 + 1 = x^2$

and $(g \circ f)(x) = g(f(x)) = g(x+1) = (x+1) + 1 = (x+1)^2 - 1 = x^2 + 2x + 1 - 1 = x^2 + 2x$