Composite and Inverse Functions

College Algebra

Main Ideas

- Composite functions are a way to turn a two-step process into a one-step process.
- Inverse functions are a way to start with the output of a function and find the input that gives that output.
- When composing a function with its inverse cancels the two functions. This is useful for solving equations.

Composite Functions

Definition – Composite Functions

If f and g are two functions so tha the range of f is the same as the domain of g, then the composite function $g \circ f$ is defined by $(g \circ f)(x) = g(f(x))$.

Inverse Functions

Definition – Inverse Functions

Two functions f and g are inverse functions if $(g \circ f)(x) = x$ and $(f \circ g)(x) = x$ for all x in the domains of f and g. The inverse of the function f is denoted f^{-1}.

Procedure – Finding Inverse Functions

To find the inverse of the function $y = f(x)$:

1. Set up the equation $x = f(y)$.
2. Solve the equation for y.
3. Use the solution to define $y = f^{-1}(x)$.