

Math Worksheet: Inverse Functions (3)

1. Let $g(x) = f(x-h) + k$ where f is an invertible function.

Express the inverse of g in terms of f^{-1} , h and k and interpret the result obtained.

$$\text{let } y = f(x-h) + k$$

interchange x and y and solve for y .

$$x = f(y-h) + k$$

$$x - k = f(y-h)$$

$$f^{-1}(x-k) = f^{-1}(f(y-h)) = y-h$$

$$y = g^{-1}(x) = f^{-1}(x - k) + h$$

A vertical shift of g leads to a horizontal shift of g^{-1} and a horizontal shift of g leads to a vertical shift of g^{-1} .