Inverse Functions

Every function $f$ has its associated input and output variable, say $x$ and $y$, so that $y = f(x)$. It is sometimes possible to reverse the roles of these variables to create a new function, called the inverse of $f$ and symbolized $f^{-1}$, which has $y$ as input variable and $x$ as output, so that $x = f^{-1}(y)$. (Observe that the notation $f^{-1}(y)$ does not mean the same as $\frac{1}{f(y)}$; the –1 does not represent an exponent.)

[Examples: p. 79-80, #5, 13, 23]

The inverse function simply reverses the role of the two variables that are linked by the original function. Thus, the domain of the inverse function $f^{-1}$ is precisely equal to the range of the original function $f$. Similarly, the range of the inverse function $f^{-1}$ is the domain of the original function $f$. 