Inverse Functions

Why must the function be one-to-one for an inverse function to exist?

How do we find an inverse function?

Example Steps

1. If $f\left(x\right)=3-4x$, find $f^{-1}(x)$
2. If $f\left(x\right)=\frac{x+2}{2x-1}$, $x\ne \frac{1}{2}$, determine $f^{-1}\left(x\right)$

Graphing an Inverse Function



The domain of $f\left(x\right)$ is the range of $f^{-1}\left(x\right)$ and vice versa.

Example

If $g(x)$ is defined as $g\left(x\right)=\sqrt{x-2} \left\{x\in R,x\geq 2\right\}$

1. Find the range of $g\left(x\right)$.
2. Calculate $g^{-1}\left(x\right)$
3. Sketch the graphs of both functions.
4. State the domain and range of $g^{-1}\left(x\right)$.

Test your understanding

The function $f$ is defined by

 $f:x\rightarrow e^{x}+2$, $x\in R$

(a) Find $f^{-1}$, the inverse function of $f$, stating its domain.

(b) On the same axe sketch the curves with equation $y=f\left(x\right)$ and $y=f^{-1}\left(x\right)$, giving the coordinates of all the points where the curves cross the axes.

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