Solving for values in the inverse

- there are two ways to do this

Ex $g(x) = 5 + 2x$, find $g^{-1}(3)$

way 1: find inverse & plug in

$$g^{-1}(x) = \frac{x-5}{2}$$

$$g^{-1}(3) = \frac{3-5}{2} = \frac{-2}{2} = -1$$

way 2: the x-value of $g^{-1}(x)$ is the y-value of $g(x)$ because they are inverses.

$3 = 5 + 2x$ set equal to original

$-5 \quad -5$

$-2 = 2x$

$-1 = x$ this is the y-value of $g^{-1}(x)$

so $\boxed{g^{-1}(3) = -1}$

Important info

- if $f(x)$ & $f^{-1}(x)$ are inverses
  $f(f^{-1}(x)) = x$ & $f^{-1}(f(x)) = x$
- only add $\pm$ when using even roots ie $\sqrt{\ }$, $\sqrt[4]{\ }$, etc.
- only use f^{-1} notation if the inverse is a function