

## 9-5 Functions and their inverses

ex.1  $f(x) = x^2 - 1$  Find the inverse

$$y = x^2 - 1 \quad 1) \text{ switch } x \text{ \& } y$$

$$x = y^2 - 1 \quad 2) \text{ solve for } y$$

$$\begin{array}{r} +1 \\ \hline \pm \sqrt{x+1} = \sqrt{y^2} \end{array}$$

$$\pm \sqrt{x+1} = y$$

$$f^{-1}(x) = \pm \sqrt{x+1}$$

ex.2  $g(x) = \sqrt{x} + 3$

$$\begin{array}{r} x = \sqrt{y} + 3 \\ -3 \quad | \quad -3 \\ \hline \end{array}$$

$$(x-3)^2 = (\sqrt{y})^2$$

$$x^2 - 6x + 9 = y$$

$$g^{-1}(x) = x^2 - 6x + 9$$