

## Function Inverses

eg  $f(x) = \frac{5}{x+2}$ , for what value of  $x$  does  $f(x) = 2$ ?

(b) " " "  $f(x) = 5$ ?

a)  $2 = \frac{5}{x+2}$

(c) " " "  $f(x) = -1$ ?

$$\begin{array}{l} 2(x+2) = 5 \\ 2x+4 = 5 \end{array} \rightarrow 2x = 1 \Rightarrow \boxed{x = \frac{1}{2}}$$

Solve for x:  $y = \frac{5}{x+2} \Rightarrow x+2 = \frac{5}{y} \Rightarrow x = \frac{5}{y} - 2$

$$\Rightarrow \boxed{x = \frac{5-2y}{y}}$$

← inverted  $f(x)$

$$y = f(x)$$

$$\Leftrightarrow x = g(y)$$

$g(y)$  is inverse of  $f(x)$ .

(a) :  $y = 2 \Rightarrow x = \frac{5-2(2)}{2} = \frac{1}{2}$ .

(b) :  $y = 5 \Rightarrow x = \frac{5-2(5)}{5} = -1$

(c) :  $y = -1 \Rightarrow x = \frac{5-2(-1)}{-1} = -7$