

## Inverse Functions

Find the inverse function,  $f^{-1}(x)$ , of the following functions:

- (a)  $f(x) = 3x - 1$
- (b)  $f(x) = 2x + 3$
- (c)  $f(x) = 1 - 2x$
- (d)  $f(x) = x^2 + 5$
- (e)  $f(x) = 6(4x - 1)$
- (f)  $f(x) = 4 - x$
- (g)  $f(x) = 3x^2 - 2$
- (h)  $f(x) = 2(1 - x)$

- (a)  $\frac{x+1}{3}$
- (b)  $\frac{x-3}{2}$
- (c)  $\frac{1-x}{2}$
- (d)  $\pm\sqrt{x-5}$
- (e)  $\frac{x+6}{24}$
- (f)  $4-x$
- (g)  $\pm\sqrt{\frac{x+2}{3}}$
- (h)  $\frac{2-x}{2}$

Find the inverse function,  $f^{-1}(x)$ , of the following functions:

- (i)  $f(x) = \frac{2x}{x+1}$
- (j)  $f(x) = \frac{x+1}{x-2}$

- (i)  $\frac{-x}{x-2}$  or  $\frac{x}{2-x}$
- (j)  $\frac{1+2x}{x-1}$

The function is such that  $f(x) = 7x - 3$

- (a) Find  $f^{-1}(x)$
- (b) Solve the equation  $f^{-1}(x) = f(x)$

- (a)  $\frac{x+3}{7}$
- (b)  $7x-3 = \frac{x+3}{7}$   
 $x = \frac{1}{2}$

The function is such that  $f(x) = \frac{8}{x+2}$

- (a) Find  $f^{-1}(x)$
- (b) Solve the equation  $f^{-1}(x) = f(x)$

- (a)  $\frac{8}{x} - 2$  or  $\frac{8-2x}{x}$
- (b)  $\frac{8}{x+2} = \frac{8-2x}{x}$   $x = -4, x = 2$

The function is such that

$$f(x) = \frac{1}{x+4}, \quad x \neq -4$$

Evaluate  $f^{-1}(-3)$

$$f^{-1}(x) = \frac{1-4x}{x}$$
$$f^{-1}(-3) = \frac{-13}{3}$$