

- ① 9. The function f has domain $x \geq 0$ and is defined by

$$f(x) = \frac{8}{x+2}$$

Find an expression for $f^{-1}(x)$ and write down the domain of f^{-1} . [4]

- ② 8. The function f is defined for $x \geq 0$ by $f(x) = 3x^2 + 4$.

(a) Find an expression for f^{-1} , stating the range and domain of f^{-1} . [6]

(b) Sketch the graphs of f and f^{-1} using the same axes. [3]

- ③ 3. The function f has domain $(2, \infty)$ and is defined by

$$f(x) = \ln(x-2) + 3.$$

Find an expression for $f^{-1}(x)$. [4]

- ④ 4. The function f has domain $[1, \infty)$ and is defined by

$$f(x) = \ln(5x-4) + 2.$$

(a) Find an expression for $f^{-1}(x)$. [4]

(b) State the domain and range of f^{-1} . [2]

- ⑤ 10. The function f has domain $(2, \infty)$ and is defined by

$$f(x) = \frac{1}{\sqrt{x-2}}$$

(a) Write down the range of f . [1]

(b) Find an expression for $f^{-1}(x)$, stating the domain and range of f^{-1} . [5]

(c) Show that the equation

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

has no solutions. [4]

- ⑥ 10. The function f has domain $[0, \infty)$ and is defined by

$$f(x) = \sqrt{x+1}.$$

(a) Find an expression for $f^{-1}(x)$. [3]

(b) Write down the domain and range of f^{-1} . [2]

(c) Sketch the graph of $y = f^{-1}(x)$. Using the same diagram, sketch the graph of $y = f(x)$. [3]