

Marks are indicated in brackets after each question number

2013 Paper 1 Question 13, (2)

A function  $f$  is defined on a suitable domain by  $f(x) = \frac{x+2}{x^2-7x+12}$ .

What value(s) of  $x$  cannot be in this domain?

2014 Paper 1 Question 12, (2)

A function  $f$ , defined on a suitable domain, is given by  $f(x) = \frac{6x}{x^2+6x-16}$ .

What restrictions are there on the domain of  $f$ ?

2015 Paper 2 Question 2, (2) (3) (2)

Functions  $f$  and  $g$  are defined on suitable domains by

$$f(x) = 10 + x \quad \text{and} \quad g(x) = (1 + x)(3 - x) + 2.$$

(a) Find an expression for  $f(g(x))$ .

(b) Express  $f(g(x))$  in the form  $p(x+q)^2 + r$ .

(c) Another function  $h$  is given by  $h(x) = \frac{1}{f(g(x))}$ .

What values of  $x$  cannot be in the domain of  $h$ ?

2019 Paper 1 Question 12, (2) (1)

Functions  $f$  and  $g$  are defined by

- $f(x) = \frac{1}{\sqrt{x}}$ , where  $x > 0$
- $g(x) = 5 - x$ , where  $x \in \mathbb{R}$ .

- (a) Determine an expression for  $f(g(x))$ .
- (b) State the range of values of  $x$  for which  $f(g(x))$  is undefined.

2019 Paper 2 Question 8, (3) (1)

A function,  $f$ , is given by  $f(x) = \sqrt[3]{x} + 8$ .

The domain of  $f$  is  $1 \leq x \leq 1000$ ,  $x \in \mathbb{R}$ .

The inverse function,  $f^{-1}$ , exists.

- (a) Find  $f^{-1}(x)$ .
- (b) State the domain of  $f^{-1}$ .