

Nov 06 3H

17. The function f is defined as $f(x) = \frac{x}{x-1}$.

(a) Find the value of

(i) $f(3)$,

.....

(ii) $f(-3)$.

.....

(2)

(b) State which value(s) of x must be excluded from the domain of f .

.....

(1)

(c) (i) Find $ff(x)$.

Give your answer in its most simple form.

$ff(x) = \dots\dots\dots$

(ii) What does your answer to (c)(i) show about the function f ?

.....

.....

(4)

(Total 7 marks)

Q17



NOV 08 4H

21. The function f is defined as

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

(a) Find the value of $f(2)$

.....
(1)

(b) State which value(s) of x must be excluded from the domain of f .

.....
(1)

(c) Given that $f(a) = \frac{1}{10}$, find the value of a .

$a =$
(1)

(d) The function g is defined as

$$g(x) = x + 2$$

Express the function gf in the form $gf(x) = \dots$

Give your answer as a single algebraic fraction in its simplest form.

$gf(x) =$
(2)

(Total 5 marks)

Q21



Nov 05 41

17. Three functions are defined as follows:

$$f: x \mapsto \cos x^\circ \text{ for the domain } 0 \leq x \leq 180$$

$$g: x \mapsto \sin x^\circ \text{ for the domain } 0 \leq x \leq 90$$

$$h: x \mapsto \tan x^\circ \text{ for the domain } p \leq x \leq q$$

(a) Find the range of f.

.....
(2)

(b) Given that the range of h is the same as the range of g, find a value of p and a value of q.

$p = \dots\dots\dots q = \dots\dots\dots$
(3)

(Total 5 marks)

Q17

23.

$$f: x \mapsto 3x + 2$$

$$g: x \mapsto 2x - 5$$

Nov 07 41

(a) Express the composite function fg in the form $fg: x \mapsto \dots$
Give your answer as simply as possible.

$fg: x \mapsto \dots\dots\dots$
(2)

(b) Express the inverse function f^{-1} in the form $f^{-1}: x \mapsto \dots$

$f^{-1}: x \mapsto \dots\dots\dots$
(2)

(Total 4 marks)

Q23

19.

$$f: x \mapsto 2x - 1$$

May 04 3H

Leave blank

$$g: x \mapsto \frac{3}{x}, x \neq 0$$

(a) Find the value of

(i) $f(3)$,

.....

(ii) $fg(6)$.

.....

(2)

(b) Express the inverse function f^{-1} in the form $f^{-1}: x \mapsto \dots$

.....

(2)

(c) (i) Express the composite function gf in the form $gf: x \mapsto \dots$

.....

(ii) Which value of x must be excluded from the domain of gf ?

$x = \dots$

(2)

Q19

(Total 6 marks)

22.

$$f(x) = x^2$$

$$g(x) = x - 6$$

Nov 04 4H

Solve the equation $fg(x) = g^{-1}(x)$

Q22

.....
(Total 5 marks)