

Functions Test Paper 2 [19 marks]

1a. [3 marks]

Markscheme

interchanging x and y (may be seen at any time) (M1)

evidence of correct manipulation (A1)

e.g. $x = 2y + 4$

$f^{-1}(x) = \frac{x-4}{2}$ (accept $y = \frac{x-4}{2}, \frac{x-4}{2}$) A1 N2

[3 marks]

1b. [2 marks]

Markscheme

attempt to form composite (in any order) (M1)

e.g. $f(7x^2), 2(7x^2) + 4, 7(2x + 4)^2$

$(f \circ g)(x) = 14x^2 + 4$ A1 N2

1c. [2 marks]

Markscheme

correct substitution (A1)

e.g. $7 \times 3.5^2, 14(3.5)^2 + 4$

$(f \circ g)(3.5) = 175.5$ (accept 176) A1 N2

[2 marks]

2a. [3 marks]

Markscheme

(a) (i) $k = 2$ A1 N1

(ii) $p = -1$ A1 N1

(iii) $q = 5$ A1 N1

[3 marks]

2b. [3 marks]

Markscheme

recognizing one transformation (M1)

eg horizontal stretch by $\frac{1}{3}$, reflection in x -axis

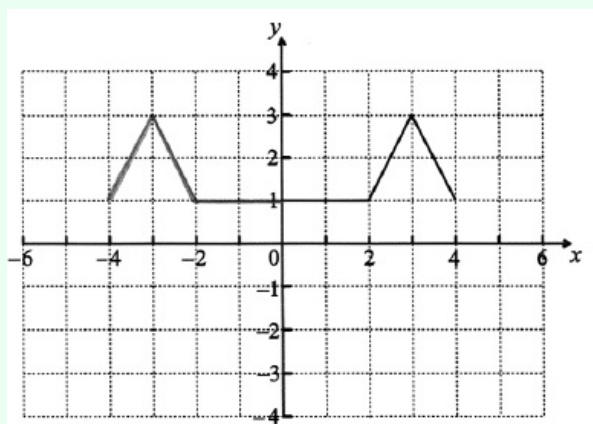
A' is $(2, -5)$ A1A1 N3

[3 marks]

Total [6 marks]

3a.

[2 marks]

Markscheme

A2 N2

[2 marks]

3b.

[2 marks]

Markscheme

Description of transformation	Diagram letter
Horizontal stretch with scale factor 1.5	C
Maps f to $f(x)+1$	D

A1A1 N2

[2 marks]

3c.

[2 marks]

Markscheme

translation (accept move/shift/slide etc.) with vector $\begin{pmatrix} -6 \\ -2 \end{pmatrix}$ A1A1 N2

[2 marks]