

2.4 Homework

GCSE Mathematics Functions I

These questions are harder.
If you get stuck on one, miss it out and come back to it later.

Marks Available : 32

Question 1

If $f(x) = 8x + 5$, $x \in \mathbb{R}$, find;

- (i) $f(4)$ (ii) $f(-11)$ (iii) $f(0.25)$

[3 marks]

Question 2

If $g(x) = 13 - x$, $x \in \mathbb{R}$, find;

- (i) $g(7)$ (ii) $g(25)$ (iii) $g(-5)$

[3 marks]

Question 3

If $h(x) = \sqrt{25 - x^2}$, $x \in \mathbb{R}$, $-5 \leq x \leq 5$, find,

- (i) $h(4)$ (ii) $h(0)$ (iii) $h(-5)$

[3 marks]

- (iv) Try to find $h(7)$
Hence explain the restriction on the domain that $-5 \leq x \leq 5$

[1 mark]

Question 4

If $k(x) = 8x^2 + 6x + 13$, $x \in \mathbb{R}$, find,

- (i) $k(5)$ (ii) $k(-1)$ (iii) $k(0.5)$

[3 marks]

Question 5

If $m(x) = x^3 + x^2$, $x \in \mathbb{R}$, find,

- (i) $m(3)$ (ii) $m(-1)$ (iii) $m(0.5)$

[3 marks]

Question 6

If $n(x) = \frac{12}{x}$, $x \in \mathbb{R}$, $x \neq 0$, find,

- (i) $n(6)$ (ii) $n(0.25)$ (iii) $n(36)$

[3 marks]

- (iv) Try to find $n(0)$ and hence explain the restriction on the domain that $x \neq 0$

[1 mark]

Question 7

If $f(x) = 3x^2$, $x \in \mathbb{R}$, find,

- (i) $f(11)$ (ii) $f(w + 1)$ (iii) $f(2x)$

Write your answers without any brackets.

[3 marks]

Question 8

If $f(x) = x^3 + x$, $x \in \mathbb{R}$, find,

(i) $f(4)$ (ii) $f(3w)$ (iii) $f(x^2)$

Write your answers without any brackets.

[3 marks]

Question 9

If $f(x) = x^2 + 1$, $x \in \mathbb{R}$, find,

(i) $f(14)$ (ii) $f(w + 4)$ (iii) $f(3\sqrt{x})$

Write your answers without any brackets.

[3 marks]

Question 10

If $f(x) = x^3$, $x \in \mathbb{R}$, find $f(2x + 1)$

Express your answer without using any brackets.

[3 marks]

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Teachers may obtain detailed worked solutions to the exercises by email from mhh@shrewsbury.org.uk