

AQA Level 2 Further mathematics Number & algebra

Section 3: Functions and their graphs

Section test

Questions 1 and 2 refer to the function defined by $f(x) = 1 - x^2$, where $-1 \leq x \leq 1$.

1) The value of $f(0.5)$ is

- (a) 0.5
- (b) 0.25
- (c) 0.75
- (d) 0
- (e) I don't know

2) The range of the function is given by:

- (a) $0 \leq f(x) \leq 2$
- (b) $-1 \leq f(x) \leq 1$
- (c) $-1 \leq f(x) \leq 0$
- (d) $0 \leq f(x) \leq 1$
- (e) I don't know

Questions 3 and 4 refer to the function defined by $f(x) = x^2 - x - 6$

3) The value of $f(-4)$ is:

- (a) 10
- (b) 6
- (c) -4
- (d) 14
- (e) I don't know

4) An expression for $f(2x)$ is

- (a) $4x^2 - 2x - 6$
- (b) $2x^2 - 2x - 6$
- (c) $2x^2 - 2x - 12$
- (d) $x^2 - x - 4$
- (e) I don't know

Questions 5 and 6 refer to the function defined by $f(x) = \frac{1}{x^2 + x - 2}$

5) The domain of the function is all x other than $x = a$ and $x = b$.
The values of a and b are

- (a) 2 and -1
- (b) -2 and 1
- (c) 0 and -2
- (d) 0 and 2
- (e) I don't know

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6) The value of $f(3) =$

- (a) $\frac{1}{7}$ (b) 10
(c) $\frac{1}{10}$ (d) 7
(e) I don't know

7) A function f is defined by

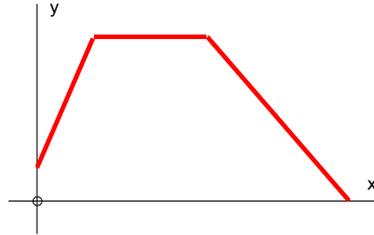
$$f(x) = 2x + 1 \quad 0 \leq x < 2$$

$$= a \quad 2 \leq x < 6$$

$$= b - x \quad 6 \leq x \leq c$$

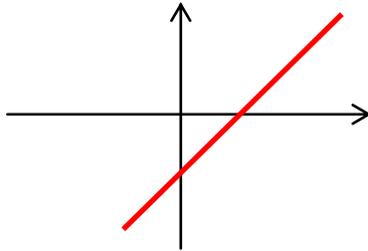
The graph of $y = f(x)$ is shown in the diagram.

What are the values of a , b and c ?



- (a) $a = 5, b = 11, c = 11$ (b) $a = 1, b = 1, c = 1$
(c) $a = 5, b = 5, c = 5$ (d) $a = 3, b = 6, c = 6$
(e) I don't know

8) The diagram shows a sketch of one of the following lines. Which one?



- (a) $y - x + 1 = 0$ (b) $y + x = 1$
(c) $y = x + 1$ (d) $y + x + 1 = 0$
(e) I don't know

9) P is the point (2, 7). Q is the point (6, -3).

What is the gradient of PQ?

- (a) 0.4 (b) -0.4
(c) 2.5 (d) -2.5
(e) I don't know

10) A straight line has a gradient of -2 and passes through the point (4, 1). What is its equation?

- (a) $y + 2x = 6$ (b) $y = 2x - 6$
(c) $2y = x - 2$ (d) $y + 2x - 9 = 0$
(e) I don't know