

AQA – Algebra functions – A2 Mathematics P1

1. June/2020/Paper_1/No.2

A student is searching for a solution to the equation $f(x) = 0$

He correctly evaluates

$$f(-1) = -1 \text{ and } f(1) = 1$$

and concludes that there must be a root between -1 and 1 due to the change of sign.

Select the function $f(x)$ for which the conclusion is **incorrect**.

Circle your answer.

[1 mark]

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

$$f(x) = x$$

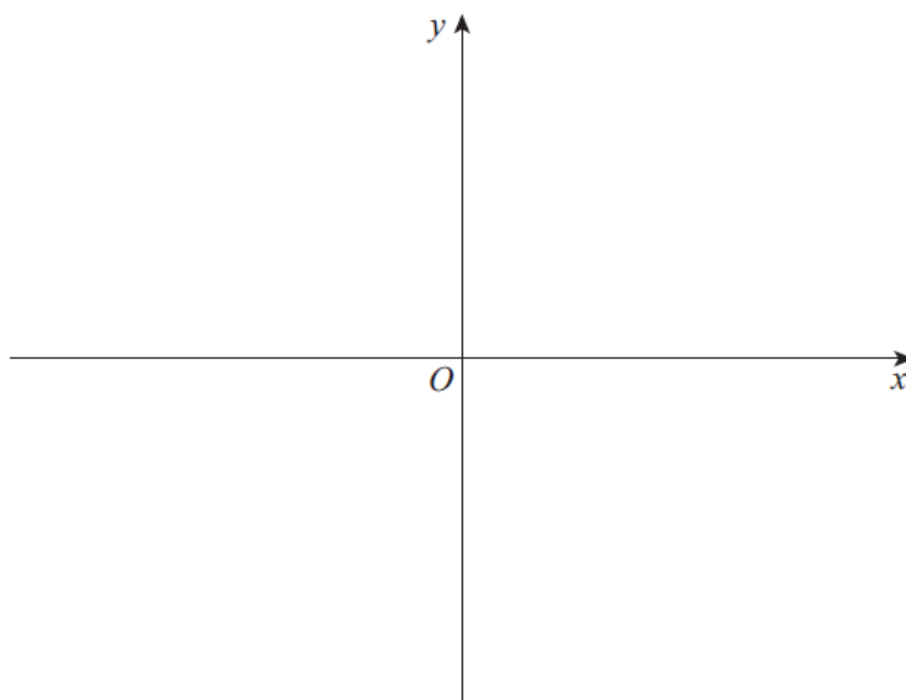
$$f(x) = x^3$$

$$f(x) = \frac{2x+1}{x+2}$$

2. June/2020/Paper_1/No.4

(a) Sketch the graph of

$$y = 4 - |2x - 6|$$



[3 marks]

(b) Solve the inequality

$$4 - |2x - 6| > 2$$

[2 marks]

3. June/2020/Paper_1/No.13

The function f is defined by

$$f(x) = \frac{2x+3}{x-2} \quad x \in \mathbb{R}, x \neq 2$$

(a) (i) Find f^{-1}

[3 marks]

(a) (ii) Write down an expression for $ff(x)$.

[1 mark]

(b) The function g is defined by

$$g(x) = \frac{2x^2 - 5x}{2} \quad x \in \mathbb{R}, 0 \leq x \leq 4$$

(b) (i) Find the range of g .

[3 marks]

(b) (ii) Determine whether g has an inverse.

Fully justify your answer.

[2 marks]

4. June/2019/Paper_1/No.6

The function f is defined by

$$f(x) = \frac{1}{2}(x^2 + 1), x \geq 0$$

(a) Find the range of f .

[1 mark]

(b) (i) Find $f^{-1}(x)$

[3 marks]

(b) (ii) State the range of $f^{-1}(x)$

[1 mark]
