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

$$f(-1) = -1$$
 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]

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

$$f(x) = x$$

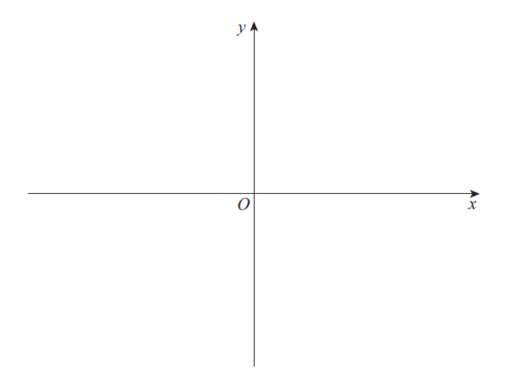
$$f(x) = x^3$$

$$f(x) = \frac{1}{x}$$
 $f(x) = x$ $f(x) = x^3$ $f(x) = \frac{2x+1}{x+2}$

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

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

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

[3 marks]

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- (a) (ii) Write down an expression for ff(x).
 - [1 mark]

(b) The function g is defined by

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

| (| (b) |) (| (i) |) Find | the | range | of g | |
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| i ind the range of g. | [3 marks] |
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(b) (ii) Determine whether g has an inverse.

| Fully justify | your | answer. |
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[2 marks]

(c) Show that

| $\frac{48 + 29x - 2x^2}{2x^2 - 8x + 8}$ [4 marks] | $gf(x) = \frac{48 + 29x - 4}{2x^2 - 8x}$ |
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| 4. | June/ | 2019 | /Paper | _1/No.6 |
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The function f is defined by

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

| (a) | Find the range of f. | [1 mark |
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| (b) (i) | Find $f^{-1}(x)$ | [3 marks |
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| (b) (ii) | State the range of $f^{-1}(x)$ | [1 mark |
| | | |

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| State the t $y = f^{-1}(x)$ | ransformatio | n which ma | ps the graph | of $y = f(x)$ | onto the grap | h of |
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| Find the co | ordinates of | f the point of | f intersection | of the graph | s of $y = f(x)$ | and |
| $y = f^{-1}(x)$ | | | | | | [2 ma |
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