

Algebra functions – A2 Mathematics P3

1. [June/2022/Paper_7357/03/No.3](#)

The function f is defined by

$$f(x) = 2x + 1$$

Solve the equation

$$f(x) = f^{-1}(x)$$

Circle your answer.

[1 mark]

$x = -1$

$x = 0$

$x = 1$

$x = 2$

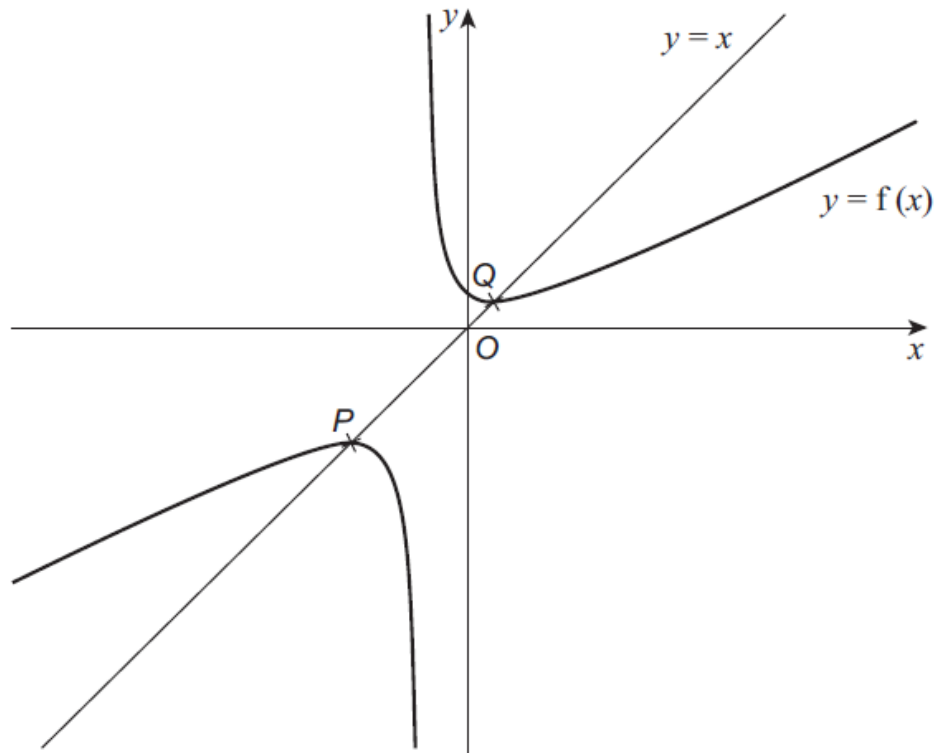
2. June/2022/Paper_7357/03/No.10

The function f is defined by

$$f(x) = \frac{x^2 + 10}{2x + 5}$$

where f has its maximum possible domain.

The curve $y = f(x)$ intersects the line $y = x$ at the points P and Q as shown below.



- (a) State the value of x which is not in the domain of f .

[1 mark]

(b) Explain how you know that the function f is many-to-one.

[2 marks]

(c) (i) Show that the x -coordinates of P and Q satisfy the equation

$$x^2 + 5x - 10 = 0$$

[2 marks]

(c) (ii) Hence, find the exact x -coordinate of P and the exact x -coordinate of Q .

[1 mark]

(d) Show that P and Q are stationary points of the curve.

Fully justify your answer.

[5 marks]

(e) Using set notation, state the range of f .

[2 marks]
