Functions – 2021 IGCSE 0444

1. June/ 2022/Paper_41/No.4

$f(x) = 2x - 1$ $g(x) = 3x - 2$ $h(x) = \frac{1}{x}, \ x \neq 0$ $j(x) = 5^x$

(a) Find

(i) $f(2)$,

..... [1]

(ii) $gf(2)$.

..... [1]

(b) Find $g^{-1}(x)$.

$g^{-1}(x) =$ ..... [2]

(c) Find x when $h(x) = j(-2)$.

$x =$ ..... [2]

(d) Write $f(x) - h(x)$ as a single fraction.

..... [2]

(e) Find the value of $\mathrm{jj}(2)$.

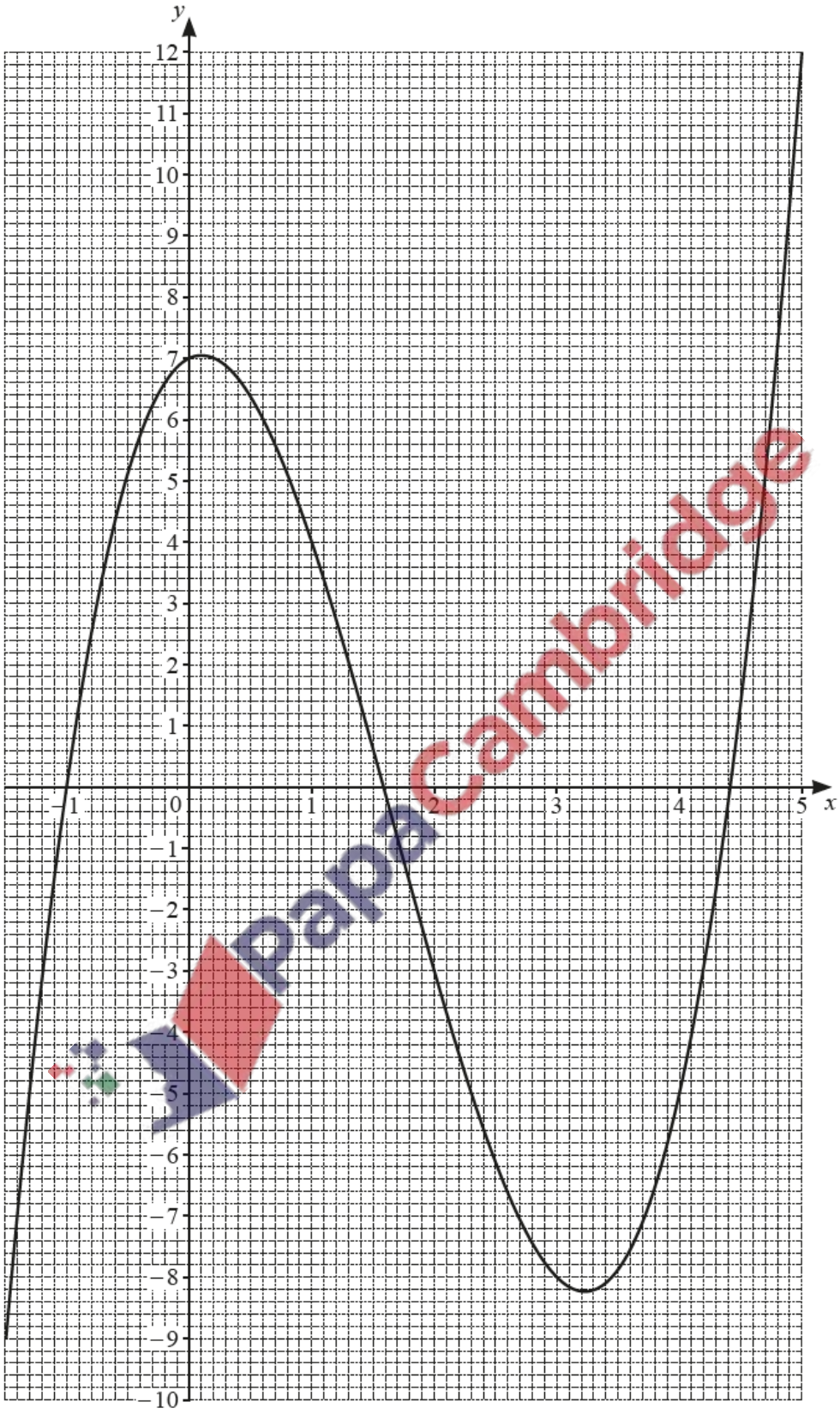
..... [1]

(f) Find x when $\mathrm{j}^{-1}(x) = 4$.

$x =$ ..... [2]

2. June/ 2022/Paper_41/No.6

(a)



The diagram shows the graph of $y = f(x)$ for $-1.5 \leqslant x \leqslant 5$.

(i) Find $f(2)$.

..... [1]

(ii) Solve the equation $f(x) = 0$ for $-1.5 \leqslant x \leqslant 5$.

$x =$ ..... or $x =$ ..... or $x =$ ..... [3]

(iii) $f(x) = k$ has three solutions for $-1.5 \leqslant x \leqslant 5$ where k is an integer.

Find the smallest possible value of k.

$k =$ ..... [1]

(iv) By drawing a suitable straight line solve the equation $f(x) = 10 - 2x$.

$x =$ ..... [3]

(v) On the grid, draw a line $y = mx$ so that $f(x) = mx$ has exactly one solution for $-1.5 \leqslant x \leqslant 5$. [2]

(b) Line L passes through the point $(4, -1)$ and is perpendicular to the line $y = 2x + 5$.

Work out the equation of line L, giving your answer in the form $y = mx + b$.

$y =$ ..... [4]