Marked example 2

Paper 1 style · No calculator

2 6 marks SL 2.5 · 2.8 ●●○ Typical

Let $f(x) = \dfrac{x+2}{x-1}$, for $x \neq 1$.

(a) Show that f is its own inverse. **[3]**

(b) Hence write down $(f \circ f)(4)$. **[1]**

(c) Write down the equations of the asymptotes of the graph of f. **[2]**

MARKSCHEME (a)

$x = \dfrac{y+2}{y-1}$ **M1**

$xy - x = y + 2 \Rightarrow y(x-1) = x+2$ **A1**

$f^{-1}(x) = \dfrac{x+2}{x-1} = f(x)$ **A1**

Total 3 marks

Note Or: $(f \circ f)(x) = \dfrac{\frac{x+2}{x-1}+2}{\frac{x+2}{x-1}-1} = \dfrac{3x}{3} = x$.

MARKSCHEME (b)

4 **A1**

Total 1 mark

MARKSCHEME (c)

$x = 1$ **A1**

$y = 1$ **A1**

Total 2 marks

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