Marked example 3

Paper 2 style · Graphic display calculator

3 5 marks SL 2.2 · 2.10 ●●○ Typical

Let $f(x) = x^2 - 3$ and $g(x) = \ln(x + 4)$.

(a) Write down the largest possible domain of g. **[1]**

(b) Find the x-coordinates of the points where the graphs of f and g intersect. **[2]**

(c) Hence solve the inequality $x^2 - 3 < \ln(x + 4)$. **[2]**

MARKSCHEME (a)

$x > -4$ **A1**

Total 1 mark

MARKSCHEME (b)

$x = -1.93 \ \ (-1.93060\ldots)$ **A1**

$x = 2.20 \ \ (2.19635\ldots)$ **A1**

Total 2 marks

Note On the GDC: the two graphs, then each intersection.

MARKSCHEME (c)

the curve $y = x^2 - 3$ is below $y = \ln(x + 4)$ between the intersections **(M1)**

$-1.93 < x < 2.20$ **A1**

Total 2 marks

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