Marked example 3

Paper 2 style · Graphic display calculator

3 6 marks SL 2.8 · 2.10 ●●● Demanding

Let $f(x) = \dfrac{2x-1}{x+2}$, for $x \neq -2$, and $g(x) = 3 - x$.

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

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

(c) Hence solve $f(x) < g(x)$. **[2]**

MARKSCHEME (a)

$x = -2$ **A1**

$y = 2$ **A1**

Total 2 marks

MARKSCHEME (b)

$x = -3.19 \ \ (-3.19258\ldots)$ **A1**

$x = 2.19 \ \ (2.19258\ldots)$ **A1**

Total 2 marks

MARKSCHEME (c)

$x < -3.19$ **A1**

$-2 < x < 2.19$ **A1**

Total 2 marks

Note The asymptote $x = -2$ bounds the second interval. Award A0 for $-3.19 < x < 2.19$.

Written and verified by a practising IB mathematics teacher, produced with AI assistance; solved twice and recomputed by software. Not affiliated with or endorsed by the International Baccalaureate Organization. © 2026 Hence