Marked example 2

Paper 1 style · No calculator

2 5 marks SL 1.5 · 1.7 ●●○ Typical

Solve the equation $\log_2 x + \log_2(x-2) = 3$, for $x > 2$.

(a) Show that $x^2 - 2x - 8 = 0$. **[2]**

(b) Hence find the value of x, justifying your answer. **[3]**

MARKSCHEME (a)

$\log_2\left(x(x-2)\right) = 3$ **M1**

$x(x-2) = 2^3 = 8$ **A1**

$x^2 - 2x - 8 = 0$ **AG**

Total 2 marks

MARKSCHEME (b)

$(x-4)(x+2) = 0$ **(M1)**

$x = 4$ **A1**

$x = -2$ rejected: $\log_2(-2)$ is not defined **R1**

Total 3 marks

Note Or: $x > 2$.

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