Exercise 3

Paper 2 style · Graphic display calculator

3 5 marks SL 2.9 · 2.11 ●●○ Typical

Let $f(x) = e^x$ and $g(x) = -e^{x-2} + 3$.

(a) Write down the equation of the horizontal asymptote of the graph of g. **[1]**

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

(c) Describe the transformations that map the graph of f onto the graph of g. **[2]**

The markscheme is on the next page: try the question first. 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.
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MARKSCHEME (a)

$y = 3$ **A1**

Total 1 mark

MARKSCHEME (b)

$e^x = -e^{x-2} + 3$ **(M1)**

$x = 0.972 \quad (0.971684\ldots)$ **A1**

Total 2 marks

MARKSCHEME (c)

translation 2 units to the right, and reflection in the x-axis **A1**

then translation 3 units up **A1**

Total 2 marks

Note The reflection must come before the upward translation.