

The variables x and y satisfy the differential equation

$$\frac{dy}{dx} = xe^{y-x},$$

and $y = 0$ when $x = 0$.

- (a) Solve the differential equation, obtaining an expression for y in terms of x .

[7]

[illegible]

This image shows a full page of white paper with horizontal dashed lines, typical of primary school handwriting practice paper. The lines are evenly spaced and run across the entire width of the page. There are no margins, text, or other markings present.

- (b)** Find the value of y when $x = 1$, giving your answer in the form $a - \ln b$, where a and b are integers. [1]

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