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If $a \neq 1$, the graph will be a curve, not a straight line, that never crosses the x -axis, and never crosses any other horizontal line more than once, so the function is 1:1.

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We always have $\log_a a^x = x$ when the logarithm is defined.

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or $\log_a \frac{1}{a} = \log_a 1 - \log_a a = 0 - (1) = -1$

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