08	7a	Solve $\log_e x - \dfrac{3}{\log_e x} = 2$	3

Let $m = \log_e x$

$$\therefore m - \frac{3}{m} = 2$$
$$m^2 - 3 = 2m$$
$$m^2 - 2m - 3 = 0$$
$$(m - 3)(m + 1) = 0$$
$$m = 3, -1$$

$\therefore \log_e x = 3$ or $\log_e x = -1$

$x = e^3$ $\quad$ $x = e^{-1}$

$\therefore x = e^3$ or $\dfrac{1}{e}$

* These solutions have been provided by *projectmaths* and are not supplied or endorsed by the Board of Studies

Board of Studies: Notes from the Marking Centre

In many responses candidates did not recognise that the expression was equivalent to a quadratic equation. Quality responses replaced $\log_e x$ with a variable such as u. A significant number of responses indicated that there was no solution to $\log_e x = -1$ or could not determine $x = e^3$ or $x = e^{-1}$ from $\log_e x = 3$ or $\log_e x = -1$.

Source: http://www.boardofstudies.nsw.edu.au/hsc_exams/