05	2d	Find the equation of the tangent to $y = \log_e x$ at the point $(e, 1)$.	2

$$y = \log_e x$$

$$\frac{dy}{dx} = \frac{1}{x}$$

Subs $x = e$:

$$\frac{dy}{dx} = \frac{1}{e}$$

Using $y - y_1 = m(x - x_1)$ with $(e, 1)$ and $m = \frac{1}{e}$.

$$y - 1 = \frac{1}{e}(x - e)$$

$$ey - e = x - e$$
$$x - ey = 0$$

* 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

This part required the derivative of the simple logarithmic function leading to the equation of the tangent at a specific point on the curve. Average responses included the correct derivative in general terms, ie $y' = \frac{1}{x}$, and better responses noted the gradient was $\frac{1}{e}$.

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