12	11d	Differentiate $(3 + e^{2x})^5$.	2

State Mean: **1.71/2**

$y = (3 + e^{2x})^5$

Using the function of a function rule/chain rule:

$$\frac{dy}{dx} = 5(3 + e^{2x})^4 . \frac{d}{dx}(3 + e^{2x})$$

$$= 5(3 + e^{2x})^4 . 2e^{2x}$$

$$= 10e^{2x}(3 + e^{2x})^4$$

Board of Studies: Notes from the Marking Centre

In most responses, candidates differentiated the expression using the chain rule and arrived at the correct answer. In weaker responses, the most common mistakes were failing to differentiate the expression inside the bracket and failing to write down the power in the answer to obtain $10e^{2x}\left(3+e^{2x}\right)$.

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