11	2d	Find the derivative of $y = x^2e^x$ with respect to x.	2

State Mean: **1.73/2**

$y = x^2\ e^x$

Using the product rule,

Let $u = x^2$, $u' = 2x$

Let $v = e^x$, $v' = e^x$

$$\frac{dy}{dx} = u'.v + v'.u$$

$$= 2x.\ e^x + e^x.\ x^2$$

$$= x e^x\ (2 + x)$$

* 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 of the question was completed successfully by most candidates. Many were assisted by using an organisation area for u, u', v and v'. Few quoted the product rule but most were able to write the derivative expressions correctly. The occasional errors were in having an inappropriate negative sign in the rule, or by having the derivative of e^x as xe^x.

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