12	11c	Find the equation of the tangent to the curve $y = x^2$ at the point where $x = 3$.	2

State Mean: **1.64/2**

$y = x^2$

$\frac{dy}{dx} = 2x$

At $x = 3$, gradient $m = 2 \times 3$

$= 6$

At $x = 3$, $y = (3)^2$

$= 9$ $\therefore$ (3, 9)

Using $y - y_1 = m(x - x_1)$

$y - 9 = 6(x - 3)$

$y - 9 = 6x - 18$

$\therefore 6x - y - 9 = 0$

Board of Studies: Notes from the Marking Centre

Most candidates earned full marks for this part. A common mistake was to use $2x$ as the gradient rather than evaluating to find a numerical answer, resulting in a quadratic rather than a line.

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