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<b>09</b>	<b>1d</b>	Find the gradient of the tangent to the curve $y = x^4 - 3x$ at the point $(1, -2)$ .	<b>2</b>
$y = x^4 - 3x$ $y' = 4x^3 - 3$ $y'(1) = 4(1)^3 - 3$ $= 4 - 3$ $= 1$ <p><math>\therefore</math> the gradient is 1.</p>			State Mean: <b>1.69/2</b>

\* 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

Almost all candidates recognised that this part was a calculus question. Common errors were incorrect derivatives obtaining  $y' = 4x - 3$  or  $y' = 4x^3 - 3x$ . The use of the derivative was also problematic with some responses attempting to calculate stationary points and others solving  $4x^3 - 3 = -2$ .

Source: [http://www.boardofstudies.nsw.edu.au/hsc\\_exams/](http://www.boardofstudies.nsw.edu.au/hsc_exams/)