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<b>08</b>	<b>5a</b>	The gradient of a curve is given by $\frac{dy}{dx} = 1 - 6 \sin 3x$ . The curve passes through the point $(0, 7)$ . What is the equation of the curve?	<b>3</b>
$\frac{dy}{dx} = 1 - 6 \sin 3x$ $y = x + 2 \cos 3x + c$ <p>Subs <math>(0, 7)</math>:</p> $7 = 0 + 2 \cos 3(0) + c$ $7 = 0 + 2 + c$ $5 = c$ $c = 5$ $\therefore y = x + 2 \cos 3x + 5$			

\* 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

In this part, responses displayed considerable confusion regarding the meaning and use of the derivative and the distinction between curves and their tangents. A very common error was to treat the gradient function  $\frac{dy}{dx}$  as if it were a fixed gradient and to then attempt to find the equation of the tangent via  $(y - 7) = (1 - 6 \sin(3x))(x - 0)$ . It was also quite common to incorrectly argue that  $m = y'(0) = 1$  and hence that  $(y - 7) = (1)(x - 0)$ . Better responses calculated appropriate primitives and correctly evaluated the arbitrary constant of integration. Candidates are encouraged to make full use of the table of standard integrals.

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