08	2a	(iii)	Differentiate with respect to x: $\dfrac{\sin x}{x + 4}$	2

Using quotient rule: $f'(x) = \dfrac{v\dfrac{du}{dx} - u\dfrac{dv}{dx}}{v^2}$,   where $u = \sin x$ $v = x + 4$

$$\dfrac{du}{dx} = \cos x \qquad \dfrac{dv}{dx} = 1$$

$$= \dfrac{(x + 4).\cos x - \sin x.1}{(x + 4)^2}$$

$$= \dfrac{(x + 4).\cos x - \sin x}{(x + 4)^2}$$

* 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

The most successful approach to this part was to use the quotient rule rather than rewriting $\dfrac{1}{x + 4}$ as $\left(x + 4\right)^{-1}$ and using the product rule. As with the previous part, in better responses, candidates either wrote down the quotient rule and explicitly identified the components or used setting out that mirrored the formula. The most common errors in this part were thinking that the derivative of $\sin x$ is $-\cos x$, incorrectly stating the quotient rule, for example, using a plus sign in the numerator instead of a minus sign and incorrectly substituting into the correct formula.

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