10	2d	(ii) Find $\int \frac{x}{4+x^2}\,dx$.	2

State Mean: **1.35/2**

$$\int \frac{x}{4+x^2}\,dx = \frac{1}{2}\int \frac{2x}{4+x^2}\,dx$$
$$= \frac{1}{2}\log_e (4 + x^2) + c$$

* 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

Most candidates realised that a logarithm integration was needed. Most incorrect answers had a $\ln(4+x^2)$ term involved but did not correctly deal with the coefficient or with the numerator. Again, some differentiated while others thought there was an inverse tan integral involved. Of concern was a technique that used the expression $\frac{x}{2x}\int \frac{1}{4+x^2}\,dx$ outside the integral sign as it incorrectly moves the variable outside the integral.

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