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12 | 12b | Find
$$\int \frac{4x}{x^2 + 6} dx$$
.

State Mean:
$$\int \frac{4x}{x^2 + 6} dx = 2 \int \frac{2x}{x^2 + 6} dx$$

$$= 2 \log_e(x^2 + 6) + c$$

Board of Studies: Notes from the Marking Centre

In many responses, candidates recognised that the primitive involved a log function, but in a significant number of responses, candidates obtained an incorrect constant multiplier or multiplied by a multiple of x. In other weaker responses, candidates did not recognise that the primitive was a log function and attempted to integrate each term separately. In a few weaker responses, candidates attempted to give the solution as an inverse trig function.

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

^{*} These solutions have been provided by projectmaths and are not supplied or endorsed by the Board of Studies