

<b>12</b>	<b>11a</b>	Evaluate $\int_0^3 \frac{1}{9+x^2} dx$ .	<b>3</b>
$\int_0^3 \frac{1}{9+x^2} dx = \frac{1}{3} \tan^{-1} \frac{x}{3} \Big _0^3$ $= \frac{1}{3} \left[ \tan^{-1} \frac{3}{3} - \tan^{-1} \frac{0}{3} \right]$ $= \frac{1}{3} \left[ \tan^{-1} 1 - \tan^{-1} 0 \right]$ $= \frac{1}{3} \times \frac{\pi}{4}$ $= \frac{\pi}{12}$			State Mean: <b>2.68/3</b>

\* These solutions have been provided by [projectmaths](http://projectmaths.com.au) and are not supplied or endorsed by the Board of Studies

### Board of Studies: Notes from the Marking Centre

In almost all responses, candidates recognised that using the table of standard integrals was the most suitable method to find the primitive. In better responses, candidates also applied appropriate substitutions leading to the correct solution. In some weaker responses, candidates inappropriately used degrees, or did not handle the co-efficient correctly.

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