



**20** **17** Find  $\int \frac{x}{4+x^2} dx$ .

**2**

$$\begin{aligned}\int \frac{x}{4+x^2} dx &= \frac{1}{2} \int \frac{2x}{4+x^2} dx \\ &= \frac{1}{2} \ln(4+x^2) + c \quad \checkmark \quad \checkmark\end{aligned}$$

State Mean:  
**1.45/2**

### HSC Marking Feedback

#### Students should:

- identify the question as a logarithmic integral
- rearrange the algebraic expression using  $\frac{f'(x)}{f(x)}$ .

#### In better responses, students were able to:

- manipulate the given expression into an appropriate form to integrate
- use brackets or absolute value signs in the correct position
- demonstrate their understanding that the antiderivative required a logarithmic function.

#### Areas for students to improve include:

- appropriately adjusting the numerator and denominator of the integral
- correctly using brackets following a logarithmic expression
- consulting the Reference Sheet to find an appropriate integral
- adding the constant term.

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

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