

**MX**     **4**     What is the derivative of  $\tan^{-1} \frac{x}{2}$ ?     **1**  
**SP**

**19**     **3**     A.  $\frac{1}{2(4+x^2)}$      B.  $\frac{1}{4+x^2}$      C.  $\frac{2}{4+x^2}$      D.  $\frac{4}{4+x^2}$   
**MX**  
**1**

**C**

$$\begin{aligned}\frac{d}{dx} \left[ \tan^{-1} \frac{x}{2} \right] &= \frac{1}{1 + \left(\frac{x}{2}\right)^2} \cdot \frac{1}{2} \\ &= \frac{1}{2\left(1 + \frac{x^2}{4}\right)} \\ &= \frac{1}{2 + \frac{x^2}{2}} \\ &= \frac{2}{4 + x^2}\end{aligned}$$

State Mean:  
**0.7/1**

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

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