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2013 4

What is the derivative of $\frac{x}{\cos x}$?

1

- (A) $\frac{\cos x + x \sin x}{\cos^2 x}$ (B) $\frac{\cos x - x \sin x}{\cos^2 x}$ (C) $\frac{x \sin x - \cos x}{\cos^2 x}$ (D) $\frac{-x \sin x - \cos x}{\cos^2 x}$

A

Using the quotient rule,

Let $u = x$,

$u' = 1$

Let $v = \cos x$,

$v' = -\sin x$

$$\begin{aligned} \frac{d}{dx} \left[\frac{x}{\cos x} \right] &= \frac{v \cdot u' - u \cdot v'}{v^2} \\ &= \frac{\cos x \cdot 1 - x \cdot (-\sin x)}{(\cos x)^2} \\ &= \frac{\cos x + x \sin x}{\cos^2 x} \end{aligned}$$

State Mean:
0.70

* These solutions have been provided by [projectmaths](#) and are not supplied or endorsed by BOSTES.