

**20 13**
MAEvaluate $\int_0^{\frac{\pi}{4}} \sec^2 x \, dx$.**2**

$$\int_0^{\frac{\pi}{4}} \sec^2 x \, dx = [\tan x]_0^{\frac{\pi}{4}} \checkmark$$

$$= \tan \frac{\pi}{4} - \tan 0$$

$$= 1 - 0$$

$$= 1 \checkmark$$

State Mean:
1.71/2

HSC Marking Feedback

Students should:

- use the Reference Sheet to find standard integrals
- understand the need for radians when calculus is involved
- show $[\tan x]_0^{\frac{\pi}{4}}$ before their substitution step
- show the substitution into their primitive.

In better responses, students were able to:

- use calculus notation correctly
- give the correct primitive function
- substitute limits into primitives correctly
- evaluate exact trigonometric ratios
- use radians in the context of trigonometric integration.

Areas for students to improve include:

- using the Reference Sheet to find standard integrals
- understanding the need to use radians for calculus involving trigonometric functions
- using exact trigonometric ratios correctly
- fully evaluating the resulting anti-derivative to give a numerical solution.

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