

## Example 7

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$$\int_0^{\frac{\pi}{4}} \sec^2 \theta \tan \theta \, d\theta \quad [\text{Let } u = \tan \theta \Rightarrow du = \sec^2 \theta \, d\theta]$$
$$\int_0^{\frac{\pi}{4}} \sec^2 \theta \tan \theta \, d\theta \Rightarrow \int_0^1 u \, du = \frac{u^2}{2} \Big|_0^1 = \frac{1}{2}$$