

$$\int \tan^2 x \, dx$$

**Solution**

Use the identity  $\tan^2 x + 1 = \sec^2 x$  to rewrite the integral, and recall that the derivative of  $\tan x$  is  $\sec^2 x$ .

$$\int \tan^2 x \, dx = \int (\sec^2 x - 1) \, dx = \tan x - x + C.$$