

$$1 \mid \int \frac{\sqrt{x-1}}{x} dx$$

* * * *

$$2 \mid \int \tan^2 x + 1 dx$$

$$\begin{aligned} \int \tan^2 x + 1 dx &= \int \sec^2 x - 1 + 1 dx \\ &= \int \sec^2 x dx \end{aligned}$$

$$\text{Let } u = x, du = 1$$

$$\begin{aligned} &= \int \sec^2 u du \\ &= \tan u + C \\ &= \boxed{\tan x + C} \end{aligned}$$

*