

1. Evaluate each integral. Check by differentiating.

(a)  $\int \tan x \, dx$

(c) (\*\*)  $\int \tan^2 x \sec x \, dx$

(b) (\*\*)  $\int \sec^3(4x) \, dx$

(d) (\*\*)  $\int \sin^4 x \cos^4 x \, dx$

2. (\*\*) Find the length of the curve  $y = \ln(\cos x)$  from  $x = 0$  to  $x = \frac{\pi}{3}$ .