

Section 7.1, #43

Find the area between $y = 2\sin x$ and $y = \tan x$ on $[-\frac{\pi}{3}, \frac{\pi}{3}]$.

$$A = 2 \int_0^{\frac{\pi}{3}} (2 \sin x - \tan x) dx$$

According to Pg. 383 of our text:

$$\int \tan u du = -\ln |\cos u| + C$$

$$A = 2[-2 \cos x - \ln |\cos x| + C] \Big|_0^{\frac{\pi}{3}}$$

$$A = 2[-2(\frac{1}{2}) - \ln |\frac{1}{2}| + C - (-2(1) - \ln |1| + C)]$$

$$A = 2[-1 + \ln |\frac{1}{2}| + 2 - \ln |1|]$$

$$A = 2[1 - \ln |2|]$$

$$A \cong 0.614$$