

Math 250 7.2 Supplemental Homework problems – Integrating Trig Functions

Find the indefinite integral:

1) $\int \cot \frac{\theta}{3} d\theta$

9) $\int \left(2 - \tan \frac{\theta}{4} \right) d\theta$

2) $\int \csc 2x dx$

10) $\int \frac{\csc^2 t}{\cot t} dt$

3) $\int (\cos 3\theta - 1) d\theta$

Evaluate the definite integral

4) $\int \frac{\cos t}{1 + \sin t} dt$

11) $\int_1^2 \frac{1 - \cos \theta}{\theta - \sin \theta} d\theta$

5) $\int \frac{\sec x \tan x}{\sec x - 1} dx$

12) $\int_{0.1}^{0.2} (\csc 2\theta - \cot 2\theta)^2 d\theta$

6) $\int (\sec 2x + \tan 2x) dx$

13) $\int_{\pi/4}^{\pi/2} \csc x - \sin x dx$

7) $\int \tan 5\theta d\theta$

14) $\int_{-\pi/4}^{\pi/4} \frac{\sin x - \cos^3 x}{\cos^2 x} dx$

8) $\int \sec \frac{x}{2} dx$

Solutions:

$$1) \quad 3 \ln \left| \sin \frac{\theta}{3} \right| + C$$

$$2) \quad -\frac{1}{2} \ln |\csc 2x + \cot 2x| + C$$

$$3) \quad \frac{1}{3} \sin(3\theta) - \theta + C$$

$$4) \quad \ln |1 + \sin t| + C$$

$$5) \quad \ln |\sec x - 1| + C$$

$$6) \quad \frac{1}{2} \ln |\sec 2x + \tan 2x| - \ln |\cos 2x| + C$$

$$7) \quad -\frac{1}{5} \ln |\cos 5\theta| + C$$

$$8) \quad 2 \ln \left| \sec \frac{x}{2} + \tan \frac{x}{2} \right| + C$$

$$9) \quad 2\theta + 4 \ln \left| \cos \frac{\theta}{4} \right| + C$$

$$10) \quad -\ln |\cot t| + C$$

$$11) \quad \ln \left| \frac{2 - \sin 2}{1 - \sin 1} \right|$$

$$12) \quad -\cot 0.4 + \csc 0.4 - 0.2 + \cot 0.2 - \csc 0.2 + 0.1$$

$$13) \quad \ln(\sqrt{2} + 1) - \frac{\sqrt{2}}{2}$$

$$14) \quad -\sqrt{2}$$