

LESSON 4: INTEGRATION OF POWERS OF TAN, COT, SEC, CSC

- Objectives:
1. To review important integration rules
 2. To evaluate integrals involving powers of tan, cot, sec, csc

Integration Rules

$$\int \cos x dx = \sin x + C$$

$$\int \sec^2 x dx = \tan x + C$$

$$\int \sin x dx = -\cos x + C$$

$$\int \csc^2 x dx = -\cot x + C$$

$$\int \sec x dx = \ln|\sec x + \tan x| + C$$

$$\int \sec x \tan x dx = \sec x + C$$

$$\int \csc x dx = \ln|\csc x - \cot x| + C$$

$$\int \csc x \cot x dx = -\csc x + C$$

$$\int \tan x dx = \ln|\sec x| + C \text{ or } -\ln|\cos x| + C$$

$$\int \cot x dx = \ln|\sin x| + C$$

Examples

1. $\int \tan^3 x dx$
2. $\int \tan x \sec x \tan(\sec x) dx$

Problems

1. $\int \cot^4 3x dx$
2. $\int \sec^6 x dx$
3. $\int \tan^5 x \sec^7 x dx$