

TRIGONOMETRIC INTEGRALS. PART VMore Reduction Formulas

$$\int \tan^n x \, dx = \frac{\tan^{n-1} x}{n-1} - \int \tan^{n-2} x \, dx$$

$$\int \sec^n x \, dx = \frac{\sec^{n-2} x \tan x}{n-1} + \frac{n-2}{n-1} \int \sec^{n-2} x \, dx$$

$$\text{Ex: } \int \tan^4 x \, dx = \frac{\tan^3 x}{3} - \int \tan^2 x \, dx$$

$$= \frac{1}{3} \tan^3 x - \left[ \frac{\tan x}{1} - \int \tan^0 x \, dx \right]$$

$$= \frac{1}{3} \tan^3 x - \tan x + x + C$$

$$\text{Ex: } \int \tan^5 x \, dx = \frac{\tan^4 x}{4} - \int \tan^3 x \, dx$$

$$= \frac{1}{4} \tan^4 x - \left[ \frac{\tan^2 x}{2} - \int \tan x \, dx \right]$$

$$= \frac{1}{4} \tan^4 x - \frac{1}{2} \tan^2 x + \ln |\sec x| + C$$

$$\text{NEXT VIDEO: } \int \tan^m x \cdot \sec^n x \, dx$$