

8.5 Trig. Integrals (U-Sub) I

Wednesday, June 12, 2019 7:14 AM

Option #1: Let  $u =$  quantity raised to a power

Option #2: Let  $u =$  quantity that is being "triggered"

~~ex~~  $\int \frac{\cos x}{\sin^6 x} dx$  ←  $(\sin x)^6$

$u = \sin x$   
 $du = \cos x dx$

$\frac{du}{\cos x} = dx$

$\int \frac{\cancel{\cos x}}{(u)^6} \frac{du}{\cancel{\cos x}}$   
 $\int u^{-6} du$

$-\frac{1}{5} u^{-5} + C \rightarrow -\frac{1}{5} \sin^{-5} x + C$

OR  
 $\frac{-1}{\sin^5 x} + C$

~~ex~~  $\int 4x \sec(3x^2) \tan(3x^2) dx$

$u = 3x^2$

$du = 6x dx$

$\frac{du}{6x} = dx$

$\int \cancel{4x} \sec(u) \tan(u) \frac{du}{\cancel{6x}}$

$\int \frac{2}{3} \sec(u) \cdot \tan(u) du$

$\frac{2}{3} \sec(u) + C$

$\frac{2}{3} \sec(3x^2) + C$