8.2 Trig. Antiderivatives

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TRIG. DERIVATIVES

$\frac{d}{dx}\sin x = \cos x$

$\frac{d}{dx}\cos x = -\sin x$

$\frac{d}{dx}\tan x = \sec^2 x$

$\frac{d}{dx}\csc x = -\csc x \cdot \cot x$

$\frac{d}{dx}\sec x = \sec x \cdot \tan x$

$\frac{d}{dx}\cot x = -\csc^2 x$

$\int f(x)\,dx$ TRIG. ANTIDERIVATIVES

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

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

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

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

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

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

ex $f(x) = 8\csc x \cdot \cot x$

matches

$F(x) = 8(-\csc x) + C$ OR $F(x) = -8\csc x + C$

$-8(-\csc x \cot x) + 0$

$8\csc x \cdot \cot x$

ex $f(x) = \frac{\sin x}{\cos^2 x} = \frac{1}{\cos x} \cdot \frac{\sin x}{\cos x}$

$= \sec x \cdot \tan x \rightarrow F(x) = \sec x + C$

$f(x) = \cos(2x)$ $f'(x) = \underbrace{-\sin(2x)}_{\text{D-outer}} \cdot \underbrace{2}_{\text{D-inner}} = -2\sin(2x)$ (Chain Rule)

$F(x) = \frac{\sin(2x)}{2} + C$ OR $\frac{1}{2}\sin(2x) + C$

$\int \text{trig}(\#x)\,dx \longrightarrow \frac{1}{\#}(\text{solution }\#x) + C$