

BRADAJAYE VICTOR MUDIAGA

19/MHS01/156

$$1 \int \frac{2x}{\sqrt{4x^2-1}} dx \Rightarrow \int \frac{2x}{(4x^2-1)^{1/2}} dx$$

$$\int 2x (4x^2-1)^{-1/2} dx$$

$$u = 4x^2 - 1$$

$$\frac{du}{dx} = 8x$$

$$dx = \frac{du}{8x}$$

$$\int 2x \cdot u^{-1/2} \cdot \frac{du}{8x} \Rightarrow \int \frac{2u^{1/2} du}{8}$$

$$\frac{1}{4} \int (u^{-1/2}) du$$

$$+ \int \frac{u^{1/2}}{4 \cdot \frac{1}{2}} + C$$

$$\frac{u^{1/2}}{2} + C$$

2

$$\frac{\sqrt{4x^2-1}}{2} + C$$

2

$$2 \int \frac{\sin^{-1} x}{\sqrt{1-x^2}} dx$$

$$\int \sin^{-1} x (1-x^2)^{-1/2} dx$$

$$u = 1-x^2 \quad \frac{du}{dx} = -2x \quad dx = \frac{du}{-2x}$$

$$u = \sin^{-1} x$$

$$du = (1-x^2)^{-1/2} dx$$

$$\int u du = \frac{u^2}{2} + C$$

$$\frac{(\sin^{-1} x)^2}{2} + C$$

$$3 \int (\tan x)^6 \sec^2 x dx$$

$$u = \tan x$$

$$du = \sec^2 x dx$$

$$\int u^6 du = \frac{u^7}{7} + C$$

$$\frac{(\tan x)^7}{7} + C$$