



DATE: / /

MO TU WE TH FR SA SU

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

$$\text{let } u = \sqrt{4x^2-1} = (4x^2-1)^{1/2}$$

$$\frac{du}{dx} = \frac{1}{2} (4x^2-1)^{-1/2} \times 8x$$

$$\frac{du}{dx} = 4x (4x^2-1)^{-1/2}$$

$$dx = \frac{du}{4x(4x^2-1)^{-1/2}} = \frac{(4x^2-1)^{1/2}}{4x} du$$

→ we have

$$2 \int \frac{x}{4} dx = 2 \int \frac{x}{\cancel{(4x^2-1)^{1/2}}} \cdot \frac{\cancel{(4x^2-1)^{1/2}}}{4x} du = \frac{1}{2} \int du$$

$$\Rightarrow \frac{1}{2} u + c = \frac{1}{2} (\sqrt{4x^2-1}) + c = \frac{\sqrt{4x^2-1}}{2} + c //$$

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

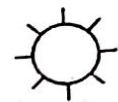
$$\text{let } u = \sin^{-1} x$$

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

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

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

19/MH501/083



MO TU WE TH FR SA SU

DATE: / /

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

$$\text{let } u = \tan x$$

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

$$\therefore \int u^6 \, du = \frac{u^7}{7} + c$$

$$= \frac{(\tan x)^7}{7} + c //$$