

$$\int \frac{x}{(4-25x^2)^{3/2}} dx$$

$$u = 4 - 25x^2$$

$$du = -50x dx \rightarrow dx = \frac{du}{-50x}$$

$$= \frac{-1}{50} \int \frac{du}{u^{3/2}} = \frac{-u^{-1/2}}{(-1/2)50} + K = \frac{(25)^{3/4}}{5^{6/4}} = 5^3 = 125$$

$$\rightarrow \frac{(4-25x^2)^{-1/2}}{25} + C \quad \text{or} \quad \frac{1}{25\sqrt{4-25x^2}} + C = \frac{1}{50\sqrt{1-\frac{25x^2}{4}}}$$

$$\int \frac{x}{(4-25x^2)^{3/2}} dx = \frac{1}{125} \int \frac{x}{\left(\frac{4}{25} - x^2\right)^{3/2}} dx$$

$$dx = \frac{2}{5} \cos \theta d\theta$$

$$x = \frac{2}{5} \sin \theta$$

$$x^2 = \frac{4}{25} \sin^2 \theta$$

$$\frac{1}{125} \int \frac{\frac{2}{5} \sin \theta \cdot \frac{2}{5} \cos \theta d\theta}{\left(\frac{4}{25}\right)^{3/2} (1 - \sin^2 \theta)^{3/2}}$$



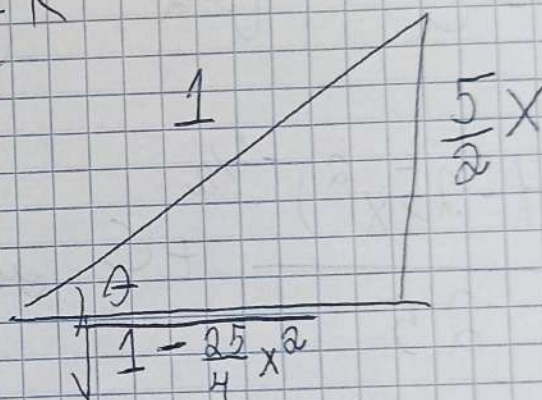
$$\frac{4}{25} \cdot \frac{1}{125} \int \frac{\sin \theta \cdot \cos \theta d\theta}{\cos^3 \theta}$$

$$= \frac{1}{50} \int \frac{\sin \theta d\theta}{\cos^2 \theta}$$

$$u = \cos \theta$$

$$du = -\sin \theta d\theta$$

$$= -\frac{1}{50} \int \frac{1}{u^2} du = \frac{1}{50 \cdot u} + K$$



$$\frac{2}{5} \sin \theta = x \rightarrow \sin \theta = \frac{5}{2} x$$

$$\cos \theta = \sqrt{1 - \frac{25}{4} x^2}$$

$$\rightarrow \frac{1}{50 \sqrt{1 - \frac{25}{4} x^2}} + K$$