$(\sin^2-1)(\sin^2-1)$

$\sin^4-2\sin^2+1$

$x^2-4x-77$

$(x^2-4x+4)-73$

x^2-4x+5

x^2-4x+4

$(x-2)^2+9$

$$\int \frac{\cos^5\theta}{\sin\theta}\,d\theta$$

$$\int \frac{\cos(\sin^2-1)^2}{\sin\theta}\,d\theta$$

$$\int \frac{\cos(\sin^4-2\sin^2+1)}{\sin\theta}\,d\theta$$

$u=\sin\theta \quad du=\cos\theta\,d\theta$

$$\int \frac{u^4-2u^2+1}{u}\,du$$

$$\int u^3-2u+\frac{1}{u}\,du = \frac{1}{4}u^4-u^2+\ln|u|+C$$

1. $$\boxed{=\frac{1}{4}(\sin\theta)^4-\sin^2\theta+\ln|\sin\theta|+C}$$

2. $$=\int \tan^5x\sec^3x\,dx$$

$$=\int \tan^4x\sec^2x(\sec x\tan x)\,dx$$

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

$$=\int (\sec^2x-1)^2\cdot\sec^2x(\sec x\tan x)\,dx$$

$$=\int (\sec^4x-2\sec^2x+1)\sec^2x(\sec x\tan x)\,dx$$

$$=\int \sec^6x-2\sec^4x+\sec^2x(\sec x\tan x)$$

$u=\sec x \quad du=\sec x\tan x\,dx$

$$\int u^6-2u^4+u^2\,du$$

$$=\frac{1}{7}u^7-\frac{2}{5}u^5+\frac{1}{3}u^3$$

$$\boxed{\frac{1}{7}\sec^7x-\frac{2}{5}\sec^5x+\frac{1}{3}\sec^3x+C}$$

$$\int \frac{dx}{x^3\sqrt{x^2-1}} \qquad x = \sec\theta \qquad dx = \sec\theta\tan\theta\, d\theta$$

$$= \int \frac{\sec\theta\tan\theta}{(\sec^3\theta)\sqrt{\sec^2-1}}\, d\theta = \int \frac{\sec\theta\,\cancel{\tan\theta}}{\sec^3\cancel{\tan\theta}}\, d\theta$$

$\frac{1}{\cos}$

$$= \int \frac{1}{\sec^2\theta}\, d\theta = \int \cos^2 d\theta$$

$$= \int \frac{1+\cos 2\theta}{2}\, d\theta = \int \frac{1}{2} + \frac{\cos 2\theta}{2}\, d\theta$$

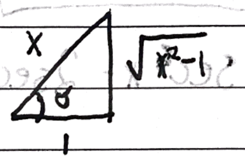
$$= \frac{1}{2}\theta + \frac{\sin 2\theta}{4} + C$$

$$\theta = \operatorname{arcsec}\left(\frac{x}{1}\right)$$

$\frac{1}{\cos}$

$x = \sec\theta$

$$\frac{1}{2}\operatorname{arcsec}\left(\frac{x}{1}\right) + \frac{\frac{2\left(\sqrt{x^2-1}\right)}{4x^2}}{\frac{4}{1}}$$



$r^2 + b^2 = x^2 \quad \sqrt{(x^2-1)}$

$$= \boxed{\frac{1}{2}\operatorname{arcsec} x + \frac{2\left(\frac{\sqrt{x^2-1}}{2x^2}\right)}{} + C}$$

4.

$$\int_1^2 \frac{\sqrt{4-x^2}}{x^2}$$

$x = 2\sin\theta$

$dx = 2\cos\theta$

$2 = 2\sin\theta$

$1 = \sin\theta = \frac{\pi}{2}$

$1 = 2\sin\theta$

$\frac{1}{2} = \sin\theta = \frac{\pi}{6}$

$$\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{\sqrt{4-4\sin^2\theta}}{4\sin^2\theta} \cdot 2\cos\theta \, d\theta$$

$$= \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{\cancel{4}\cos^2\theta \, d\theta}{\cancel{4}\sin^2\theta} = \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{\cos^2\theta \, d\theta}{\sin^2\theta}$$

$$= \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{1-\sin^2\theta}{\sin^2\theta} d\theta = \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{1}{\sin^2\theta} - 1$$

$$\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{\frac{1+\cos 2\theta}{2}}{\frac{1-\cos 2\theta}{2}} d\theta \qquad \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{1+\cos 2\theta}{2} \cdot \frac{2}{1-\cos 2\theta}$$

$$\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{1+\cos 2\theta}{1-\cos 2\theta}$$

$$\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{\cos^2\theta \, d\theta}{\frac{1-\cos 2\theta}{2}} = \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \frac{2\cos^2\theta \, d\theta}{1-\cos 2\theta} =$$

$\frac{\cos}{\sin}$ $\quad \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}}$ $\quad \sqrt{3}$

$$\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \cot^2\theta \, d\theta \qquad \int_{\frac{\pi}{6}}^{\frac{\pi}{2}} (\csc^2 - 1)\, dx$$

$$-\cot x - x \Big|_{\frac{\pi}{6}}^{\frac{\pi}{2}} \qquad -\frac{\pi}{2} - \left(-\sqrt{3} - \frac{\pi}{6}\right)$$

$$\boxed{\sqrt{3} + \frac{\pi}{6} - \frac{\pi}{2}}$$