$$| \int \sin^4 x \, dx = \frac{1}{4} \int (1 - \cos 2x)^2 \, dx
 | = \frac{1}{4} \int (1 - 2\cos 2x + \frac{1}{2} + \frac{1}{2}\cos 4x) \, dx
 | = \frac{1}{4} \int (\frac{3}{2} - 2\cos 2x + \frac{1}{2}\cos 4x) \, dx
 | = \frac{1}{4} \left(\frac{3}{2}x - \sin 2x + \frac{1}{8}\sin 4x\right)
 | = \frac{3}{8}x - \frac{1}{4}\sin 2x + \frac{1}{32}\sin 4x + C \int \frac{1}{8}\sin 4x$$

$$= \int (\cos^{2}x) \, dx = \int (\cos^{2}x)^{3} \cos x \, dx$$

$$= \int (1 - \sin^{2}x)^{3} \, d(\sin x)$$

$$= \int (1 - 3\sin^{2}x + 3\sin^{4}x - \sin^{2}x) \, d(\sin x)$$

$$= \int \sin x - \sin^{2}x + \frac{3}{5}\sin^{2}x - \frac{1}{7}\sin^{2}x + C$$

$$3/\int_{0}^{\sqrt{1/2}} \cos^{3}x \, dx = \frac{1}{2} \frac{3}{4} \frac{8}{6} \frac{7}{8} \frac{9}{40} \frac{11}{10} \frac{17}{2}$$
$$= \frac{231}{2} \frac{11}{2} \frac{11}{2}$$

$$4/\int_{0}^{\pi/2} \cos^{15}x \, dx = \frac{2}{3} \frac{4}{8!} \frac{8}{7!} \frac{8}{7!} \frac{10}{13} \frac{10}{15}$$

$$= \frac{2''}{6!} \frac{2}{435}$$

 $dx = 3 \sin \theta \qquad \sqrt{9 - 4x^2} = 3 \cos \theta$ 5/ 19-4x2 dx $\int \sqrt{9-4x^2} dx = \left(3\cos\theta\left(\frac{3}{2}\cos\theta\right)d\theta\right)$ = 9 cosodo = 2 (1+cm 20) do = 9 (0+ 1 sindo) = 9 (0 + sind coso) = \frac{9}{4} \sin \frac{2x}{3} + \frac{9}{4} \frac{2x}{3} \frac{19-4x^2}{3} \rightarrow C = 9 pin (2x) + 1 x /9-4x2 + c/ $6/\int \frac{dx}{\sqrt{x^2-25}}$ X = 5 pecd Vx = 25 = 5 tand dx = 5 pecd tomodo 5 peco tano do 1/x2-25 =

 $\int \frac{dx}{\sqrt{x^2-25}} = \int \frac{5 \sec 0 \tan 0 d0}{5 \tan 0}$ $= \int \sec 0 d0$ $= \int \ln |\sec 0 + \tan 0| + C$ $= \ln |\frac{x}{5} + \frac{\sqrt{x^2-25}}{5}| + C|$

 $\frac{7}{x^2} \sqrt{\frac{dx}{x^2+36}}$ X = 6 tand dx = 6 pecodo 1/x2+36 = 6 seco $\int \frac{dx}{x^2 \sqrt{x^2 + 36}} = \int \frac{6 \sec^2 0 \, d\theta}{36 \tan^2 0 \, (6 \sec 0)}$ = 1 seco do taro = 1 (COSO Sin20 de = 1 coso da = 1 d(sind) = - 36 DinA tand = sind =- 1 seco $=-\frac{1}{36}\sqrt{x^2+36}$. = - 1 /x2+36 + C/