Friche XS Leur Sx4 Leur 111- 1 x 6 4x $= e^{4x} \left(\frac{x^{5}}{4} - \frac{5}{16}x^{4} + \frac{5}{16}x^{3} - \frac{15}{14}x^{2} + \frac{15}{125}x - \frac{15}{512} \right)$ 7 e3x 1 sin 2x -3 c3x -1 cos 2x +8e3x 4 Jose dx = e 3x (1 2m 2x p 1 cosx) + 8c - 9 le Jx Cosaxolx (cos 2x e 2 x (x = 4 e 3x (1 sin ex - 3 cos 2x) GXO -1 COSUX 4/ (cos (lux) dx u= cos(lux) N= fdx du=- f sin(lux) = x Cos(lux) dx = x Cos(lux) + Sin (lux) dx = x co(lux) +x sin(lux) - Scollux) dx (cus(lux)dx = 1 (xsin/lux)-xcus(lux)) + C

5/ $\int_{0}^{\pi} e^{\cos t} \sin 2t \, dt = 2 \int_{0}^{\pi} e^{\cos t} \sin t \, dt$ $= -2 \int_{0}^{\pi} e^{\cos t} e^{\cos t} \, d \cos t$ $= -2 \int_{0}^{\pi} u e^{u} du \qquad | \int_{0}^{\infty} u e^{u} du$ $= -2 \int_{0}^{\infty} u e^{u} du \qquad | \int_{0}^{\infty} u e^{u} du$ $= -2 \int_{0}^{\infty} (u + 1) \int_{0}^{\pi} \frac{1}{1 - 1} e^{u} du$ $= -2 \left(\frac{1}{e} (-x) - e(0) \right)$ $= \frac{4}{1 - 1} \int_{0}^{\pi} u e^{-x} dt dt$

- 2

9

S 1

2.2 Triz. Sin'x cost dx $\int \cos^2 x \sin^3 x \, dx \qquad \qquad \cos^2 x + \sin^2 x = 1$ - J cos 2 x sin x sin x dx dcon = sud = - \(\cos^2 \times \(1 - \cos^2 \times \) d(\(\cos^2 \times \) = [(cos4x - cos2x) d(cosx) $= \frac{1}{5} \cos^5 x - \frac{1}{3} \cos^3 x + C$ LX Jasxdx = Jasxdx (cosxdx) (cosxdx = \ (/- sin2x) 2 d(sinx) = [(1-2 sin x + sin x) d (sinx) = , sin x - 2 sin x + 1 sin 5x -cc/ Dodd , () dx cosxdx = -d (sinx)

cosx dx = -d (sinx) sin x dx = -d (cosx) $sin x = (-cos2x) cos^2x = \frac{1}{2} (1 + cos2x)$ $cos2x = 2cos^2x - 1 = \frac{1}{2} + \frac{1}{2} cos2x$

EY. Sing Costxolx

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

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

 $= \frac{1}{8} \left[\frac{1}{2} \times + \frac{1}{2} \sin 2x - \frac{1}{8} \sin 2x - \frac{1}{2} \sin 2x + \frac{1}{6} \sin 3x \right]$ $= \frac{1}{8} \left(\frac{1}{2} \times - \frac{1}{8} - \frac{1}{8} \sin 4x + \frac{1}{6} \sin 32x \right) + C \int_{-\infty}^{\infty} \frac{1}{8} \sin 4x + \frac{1}{6} \sin 32x + \frac{1}{6} \sin 32x \right)$

VI THOOLX dx Co 0 - 1+ co 20 = \ \ \/2 cos^2 x dx = 12 \ was 2x dx --// - 12 rin 2x = 1/2 (1-0) = 12 -tx / in x cos x dx = / in x cos x sin x dx =- (1- cusix) wix d(cusx) =- ((w=x -1) d(cosx) =- (-. cosx - cosx) (= d>x + co>x + C = /2ecx + cox + c

of (taux) = , sec x dx Cos x + s 1/2 x = 1 d (seex) = seex tank dx 1+ tan'x = sec'x a tam'x = sed-1 (= s2 = 1 tr / tan x dx = / tan x ban x dx = / fan2x (sec2x-1)dx = / (fan2x rec2x - fan2x) dx = I tan 2 rec2 x dx - I tan 2 x dx = Stan2x ol (tanx) -) (sec2x-1) dx 2 1 tan x - (tanx -x) + C = 1 tan3x - tanx+x+c/ Jecxdx u=secx N=frec2xdx

du=secxtanxdx = tanx secxdx = secxtanx- secx tan x dx = secx tanx - secx (seex-1)dx = secx tour - secxdx + seexdx 2. \sec^3xdx = secx tanx + \secx dx
= secx tanx + \lu/secx + tanx/+C, Jrec xdx = 1 sexx tour + 1 lufrecx +tain + C

Jecx dx = Jecx - tecx + tanx olx = Secx + Hanx dx = \ d(secx + fanx)

recx + fanx = lu/secx + fanx/ (C 51'm mx con x = = (201 (m-n) x + Sely (m + u) x) ((a-6) = cosa cosb + sina sinb cos (a+6) = cosa cosb - sma sinb Cus (a-b) + coslar 2 cus a cush COD a cosb = 1 (cos(a-b) + cos(a+b)) Ex , sin 3x cos 5xdx = 1 (- sin 2x + sin 8x) dx == = (+ = cos =x - = cos =x)+c $\frac{2-\frac{63\pi}{2^{9}}}{2^{9}}$ $\frac{2-\frac{63\pi}{2^{9}}}{2^{9}}$ $\frac{2-\frac{8}{2^{9}}}{2^{9}}$ $=\frac{3\pi}{2^{9}}$ $=\frac{3\pi}{2^{9}}$ $=\frac{3\pi}{2^{9}}$ $=\frac{3\pi}{2^{9}}$

Trig. Substitutions 1'x2_a2 = a sand 1/22+x2 = a reco X=atano $La^2 - x^2 = a \cos d$ X = a sind x = 2 Fand id+x2 = 2 red $\int \frac{dx}{\sqrt{u + x^2}} dx = 2 see^2 v dv$ $\int \frac{dx}{\sqrt{1+x^2}} = \int \frac{2scc^2\sigma d\sigma}{2scc\sigma}$ = / secodo = lu/seco + tano/+ C - lu/14x2 + x/+c/

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 $\frac{27}{\sqrt{9-x^2}}$ $x = 3 \sin \alpha$, $9 - x^2 = 3 \cos \alpha$ $dx = 3 \cos \alpha d\alpha$ $\int \frac{\chi^2 dx}{\sqrt{9-\chi^2}} = \int \frac{9 \sin^2 \theta}{3 \cos \theta} \frac{3 \cos \theta}{\theta} = \frac{\chi}{3}$ = 9 (1-00 20) de = \frac{9}{2} (0 - \frac{1}{2} \sin 20) + C = \frac{9}{2} (0 - \min coso) + C = \frac{9}{2} \left(\sin^2 \frac{\chi}{3} - \frac{\chi \q - \chi^2}{9} \right) + C = 9 sin x - 1 x 1 9-x2 + C

$$\int \frac{dx}{\sqrt{25x^{2}-4}} = \frac{5x = 2 \sec x}{2 \sec x} = \frac{2 \tan x}{2 \tan x}$$

$$\int \frac{dx}{\sqrt{25x^{2}-4}} = \frac{2}{5} \int \frac{\sec x \tan x}{2 \tan x} dx$$

$$= \frac{1}{5} \int \sec x \cot x \cot x$$

$$= \frac{1}{5} \ln |\sec x + |\sec x| + |\sec x|$$

$$\int \frac{dx}{\sqrt{x^{2}-x^{2}}} = \frac{1}{5} \sin \frac{x}{x}$$

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$$\int \frac{dx}{\sqrt{x^{2}-x^{2}}} = \frac{1}{5} \cos x \cot x$$

$$\int \frac{dx}{\sqrt{x^{2}-x^{2}}} = \frac{1}{5} \int \frac{\cos x \cot x}{\cos x}$$

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#12 Jolx XV4x249 2x = 3 hand dx = 3, recode 14x2+9 = 3 seco $\int \frac{dx}{x\sqrt{4x^2+9}} = \frac{3}{2} \int \frac{\sec^2 v \, dv}{\frac{3}{3} \tan v \, sseco}$ = 1 Seco do - 1 coo 5,00 de = 1 scode = - = lu/csco + coto/+C = - f lu / 2x / EC/ IX=3 tand fano = 2x

 $\frac{dx}{\sqrt{x^2-25'}} = \frac{5 \sec x \cot x \cot x}{\sqrt{x^2-25'}} = \frac{1}{\sqrt{x^2-25'}} = \frac{1}{\sqrt{x^2-25$