Fruite XS Leur Sx4 Leur HI SCUX $= e^{4x} \left(\frac{x^{5}}{4} - \frac{5x^{4}}{6} x^{3} - \frac{15}{16} x^{2} + \frac{15}{125} x - \frac{15}{512} \right)$ 1 63x 1 sin 2x -3 c3x -1 cus 2x 4 Jose dx = e 3x (1) 2x + 1 cos 2x) + 8c - 9 ledx cosaxolx (cos 2x e 2 x (x = 4 e 3x (1 sin 2x -1 3 cos 2x) -1 CDCIX
-X +1 511 4X
6x0 -1 CUSUX 4/ Cos (lux)dx 4= (s(lux) N=) dx 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/ Cost sin at alt: 2 Costs int alt =-2 Stoote Cost d Cost) =-2 | u e du | leu =-2 coot (wst-1) | -1- | cu =-2(=1(-2)-e(0)) $=\frac{4}{e}$

2.2 Triz. Sin'x cos'x dx $\int \cos^2 x \sin^3 x \, dx \qquad \cos^2 x + \sin^2 x = 1$ - J cos 2 x sin x sin x dx dcos = sud $=-\left|\cos^2x\left(1-\cos^2x\right)\right|d(\cos x)$ = [(cos4x - cos2x) d(cosx) $= \frac{1}{5} \cos^{5} x - \frac{1}{3} \cos^{3} x + C$ Ex Jasxdx = Jasxdx (cs2x)2 = \ (/-sin^x) d(sinx) = \ (1-2 sin x + sin x) d (sinx) $= \left| \sin x - \frac{2}{3} \sin^3 x + \frac{1}{5} \sin^5 x - c \right|$ Dodd > () dx cosxdx = d (sinx) sinx dx = -d(cox) sin x = 1- Cos 2x Cus x== (/+ cus 2x)

= 1 +1 cos 2x

) Ces 2x = 2 cus 2x - 1

Sing Costxolx

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

 $Cos^{3} 2x dx = \int Cos^{3} 2x Cos 2x dx$ $= \frac{1}{2} \int (1 - \sin^{3} 2x) d C \sin 2x$ $= \int (c \sin 2x) = 2 \cos 2x dx$ $= \frac{1}{2} \left(sin^{3} 2x - \frac{1}{3} sin^{3} 2x \right)$

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

Jo Wu _ Wu Co 0 - 1+ co 20 $= \int_{1}^{14} \sqrt{2 \cos^2 2x} \, dx$ = V2 S was as dx v =/ (- 12 | sin 2x | $=\frac{\sqrt{2}}{2}(1-0)$ = 12 in x cos x dx = [in x cos x sin x dx =- (1- cusix) ws.x d(cusx) =- \ ((w x - 1) d(w x) $=-\left(-\cos x - \cos x\right)$ (= d + co>x + C = /2ecx + cosx + c

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(3) x + s 1/2 x = 1 d (tank) = , sec x dx d (recx) = recx tank dx 1+ tan'x = sec'x a tam' x z sed-1 (- s2 = 1 tr / tan x dx = / tan x ban x dx = / fan2x (sec2x-1)dx = / (fan2x sec2x - fan2x) dx = f' tan2x sec2x dx - fran2x dx = Stan2x ol (tanx) -) (sec2x-1) dx = 1 fan x - (fanx -x) + C = 1 fan3x - fanx+x+c/ Jerxdx U= secxtanxdx = fanx secxdx = secxtanx- secx tanx dx = secx tanx - secx (seex-1)dx = secx tanx - secxdx + seexdx 2. \sec^3xdx = secx tanx + \secx dx
= secx tanx + \lu/secx + tanx/fec, Jrec xdx = 1 sexx tour + 1 lufrecx etain + (

Jecx dx = Jecx tecx + Panx olx = Secx + flanx dx = lu/secx + tanx/ &C 512 MXCOSNX = 1 (201 (m-n)x+ Sely (m + 4) X) ((a-6) = cosa cosb + sina sinb cos (a+6) = cosa cosb - sma sinb Cus (a-b) + coslar 2 cus a cush Cosa cosb = 1 (cos(a-b) + cos(a+b)) Ex , sin 3 x cos 5 x dx = 1 (- sin 2x + sin 8x) dx = 1 (+ 1 cos 2x - 1 cos 8x)+C $\frac{2630}{2^{9}}$ $\frac{145}{2} \int_{0}^{\sqrt{2}} \cos^{9}x \, dx = \frac{8}{9} \cdot \frac{8}{7} \cdot \frac{4}{5} \cdot \frac{2}{3}$ $=\frac{37}{315}$

Trig. Substituturo 1x2_a2 =a land Va2+x2 = a seco X=atano $\sqrt{a^2 - x^2} = a \omega d$ X = a sind $\int \frac{dx}{14x^2} = 2 \operatorname{see}^2 dx$ $dx = 2 \operatorname{see}^2 dx$ $\int \frac{dx}{\sqrt{u+x^2}} = \int \frac{2scc^2\sigma d\sigma}{2scc\sigma}$ = /secodo = lu/reco + tano/+C

= lu /14+x2 + x/+c/

 $\frac{2x}{\sqrt{9-x^2}}$ $x = 3 \sin \alpha$, $9 - x^2 = 3 \cos \alpha$ $dx = 3 \cos \alpha d\omega$ $\int \frac{\chi^2 dx}{\sqrt{9-\chi^2}} = \int \frac{9 \sin^2 \theta}{3 \cos \theta} \frac{3 \cos \theta}{\theta}$ $\int \frac{\sin \theta}{\sqrt{3}} = \int \frac{9 \sin^2 \theta}{3 \cos \theta} \frac{3 \cos \theta}{\sqrt{3}}$ = 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 \frac{\chi}{3} - \frac{\chi \g-\chi^2}{9} \right) + \left(= 9 sin x - 1 x 1 9-x2 + C]

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

$$\sqrt{25x^{2}-4} = \frac{2}{5} \sec \theta$$

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

$$= \frac{1}{5} \int \csc \theta d\theta$$

$$= \frac{1}{5} \int \cot \theta d\theta$$

$$= \frac{1$$

#12
$$\int \frac{dx}{x \sqrt{4x^{2}+9}} = \frac{3}{2} \int \frac{\sec^{2} \sigma}{\cot^{2} \sigma} d\sigma$$

$$V = \frac{3}{2} \int \frac{\sec^{2} \sigma}{\cot^{2} \sigma} d\sigma$$

$$= \frac{3}{3} \int \frac{\sec^{2} \sigma}{\tan^{2} \sigma} d\sigma$$

$$= \frac{1}{3} \int \frac{\sec^{2} \sigma}{\tan^{2} \sigma} d\sigma$$

$$= \frac{1}{3} \int \frac{1}{\cos^{2} \sigma} d\sigma$$

$$= \frac{1}{3} \int \cos^{2} \sigma d\sigma$$

$$= -\frac{1}{3} \int \cos^{2$$

 $\frac{dx}{\sqrt{x^2-25'}} \qquad \begin{array}{l} x=5 \text{ seco} \\ dx=5 \text{ seco fanodo} \\ \sqrt{x^2-25'}=5 \text{ fano} \\ \end{array}$ $\int \frac{dx}{\sqrt{x^2-25'}} = \int \frac{5 \text{ seco fanodo}}{5 \text{ fano}}$ $= \int \text{seco odd} \\ = \ln \left| \text{seco} + \text{fano} \right| + C$ $= \ln \left| \frac{x}{5} + \frac{\sqrt{x^2-25'}}{5} \right| + C \int \frac{dx}{5}$

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