7.2 continued

Review Stry. dx $\int \sin^{4} x \, dx \qquad \int \sin^{9} x \cos^{6} x \, dx \qquad \int \sin^{7} x \cos^{4} x \, dx \qquad \int \sin^{8} x \cos^{5} x \, dx$ Jsm x cos x cos x dx $\int (\sin^2 x)^2 (\cos^2 x)^3 dx$ Jsin 6xsinx $\rightarrow \left((\sin^2 x)^2 dx \right)^2$ $\cos^4 x dx$ $(s_1n^2x)^3s_1n_X \cos^4x \int s_1n^8x (\cos^2x)^2 \cos x dx$ sin' x = 1- cor2x (1 7 (052x = 1-5112x \rightarrow (or $x = \frac{1+\cos x}{2}$ 11 $\rightarrow Sin^2 \chi = / - (0S^2 \chi)$ u = sinx $\chi = (0) \times$ du = coxdx du= -sinxdx 3 trig substitution 7.3 J9-x1 x = 3sin0et. $\int q - x^2$ dx 2 1x = 3 (050 do x2= gsin20 3coso 3coso do 9-x2 = 9-95120 Or, for the numerator, use the = Cos20 do = (q(1-sin * 0) triangle: find cosine as adjacent = 3. [coso = f cot o de over hyp. = 3 000 facto -1 do = - coto -0 + c = - (q-x2/x - sin (x) + C

 $y^2 = 1 - \chi^2$ $\chi^2 + y^2 = 1$ D J 11-x2 dx $\chi = sin \sigma$ dx = cos odo = T cos 20 cosodo $1-x^{2} = 1-sih^{2}\theta = co^{2}\theta$ = cos20 do x $= \frac{1+\cos 2\theta}{2} \frac{1}{2} \frac{1}{$ 0= sin x 20 + 4 sin 20 + C (0) 0 = JI-X2 20 + + 2 sino coso + c $= \frac{1}{2} s_{1} n' x + \frac{1}{2} x \sqrt{1 - x^2} + c$ check : derivative MORE : Ja2 - x2 x = asinga Ja' - x2 Use 1- sin2 = (0520 Ja1 X2 x $\int q^2 + \chi^2$ x= atuno a Use 1+ tant 0 = sec20

 $\int \chi^2 - q^2$ N X2- a2 X= a seco 10 Use secto -1 = fin2 o $\int \frac{1}{x^2 \sqrt{x^2 + y}} dx$ (ex 3, pg 480) Ex : $x = 2 \tan \theta$ dx = 2 sec? odo $\sqrt{x^{2}+9} = \sqrt{9} + 9 + 9$ = Jysec o = 2 sec O $= \int \frac{1}{y} \frac{\sec \Theta}{\tan^2 \Theta} \, d\Theta = \int \frac{1}{y} \frac{\cos \Theta}{\sin^2 \Theta} \, d\Theta$ u=sino du = cosolo - 1 + C X2+4 1 = + C Ysind - NX2 +4 2 = 4x 4 (x