UNIVERSIDAD DEL SURESTE

"Pasión por educar"

NOMBRE: RUBI DE JESUS ALVAREZ SANCHEZ

MATERIA: MATEMATICA APLICADA (EXAMEN)

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6TO SEMESTRE ENFERMERIA

Examen

Rubi De Jesús Álvarez Sánchez.

1.- $\int \text{sen}^{-1}\ 3x^2\ dx =$

$= \sqrt{1(3)\ (x^2)} + x^2\ \text{sen}^{-1}\ (3x^1) + c$

$= \frac{\sqrt{1-9x^4}}{3} + \frac{x^2}{\text{sen}\ 3x^2}$

$= \sqrt{1/3 - 3x^4} + \frac{x^2}{\text{sen}\ 3x^2} + c$

2.- $\int \cos^{-1}\ 5x\ dx =$

$= x\cos^{-1}(5x) - \frac{\sqrt{1-(5)^2}}{5}(x) + c$

$= \frac{x}{\cos 5x} - \sqrt{\frac{1-25x^2}{5}} + c$

$= \frac{x}{\cos 5x} - \sqrt{1/5 - 25x^2} + c$

3.- $\int \tan^{-1}\ 1/x^2\ dx =$

$= x^2 \tan^{-1}(1/x^2) - \frac{\ln|(1)^2(x^2)^2 + 1|}{2(1)} + c$

$\frac{x^2}{\tan^{1}/x^2} - \frac{\ln|1x^4+1|}{2} + c$

4.- $\int \cos^3 2x/3\, dx$

$= \frac{1}{3} \cos^3 2/3\, x\, dx = \frac{1}{3} \int \frac{\cos^3}{3} 2\, x\, dx$

$= \frac{1}{3} \int \cos^3 2x\, dx = u = 2x = \frac{1}{3} \int \cos^3 \frac{1}{2}\, u^3 du = \frac{1}{3} \cdot \frac{1}{2}$

$\int \cos^3 \frac{1}{2}\, u\, du = \frac{1}{3} \cdot \frac{1}{2} \int \cos u \cos u\, du$

$= \frac{1}{6} (\text{sen}\, 2x - \text{sen}^3 \frac{2}{3} x + c$

5.- $\int \sec^4 2x\, dx = \sec^2 u\, du = \tan^2 u + 1$

$= \sec^2 2x \sec^2 2x\, dx$

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

$= \int \tan^2 2x \sec^2 2x\, dx + \int \sec 2x\, dx \rightarrow \int \sec^2 v\, du = \tan v$

$v^n dv = \frac{v^{n+1}}{n+1}$

$v = 2x$

$dv = 2\, dx$

$\frac{dv}{2} = dx$

$v = \tan 2x$

$dv = 2\sec^2 2x\, dx$

$\frac{dv}{2} = \sec^2 2x\, dx$

$= \int v^2 dv + \int \sec^2 v \frac{du}{2} = 1/2 \int v^2 dv + 1/2 \int \sec^2 v\, dv$

$= 1/2\, (3/3) + 1/2 \tan v + c = 1/6\, v^3 + 1/2 \tan v + c$

$= 1/6 \tan^3 2x + 1/2 \tan 2x + c$

6.- $\int Csc^{-1}\, 2x^2\, dx =$

$= \ln \left| \frac{2\sqrt{(2)^2 (x^2)^2 - 2} + (2x^2)}{2} \right| + x^2 (2x^3) + c$

$= \ln \left| \frac{2\sqrt{4x^4 - 1}}{2} 2(x^2 + x^2 \right| + c$

$csc\ 2x^2$

$\ln / 2\sqrt{2x^2 - 1} + x^2 | + \frac{x^2}{cs\,2x^2} + c$

7.- $\int Cot^{-1} \sqrt{2}\, x\, dx = \ln |(\sqrt{2}\ \frac{1}{2} (x)^2 + 1 + 2$

$x\, cot^{-1} (\sqrt{2x}) + c$

$= \frac{\ln |2x^2 + 1|}{2.82} + \frac{x}{cot + \sqrt{2}x} + c$

8.- $\int Sen^{-1}\, 12\, x^2\, dx$

$= \frac{\sqrt{1 - (\sqrt{2})x\ \ (x^2)^2}}{\sqrt{2}} + x^2\, sen^{-1} (\sqrt{2}x^2) + c$

$\frac{\sqrt{1 - 2x^4}}{1.41} + \frac{x^2}{sen\ \sqrt{2}x^2} + c$

9.- $\int senh\ 1/x^2\, dx$

$Y = senh^{1} (x/2) + \frac{x\ ^1/_2}{\sqrt{1 + (x/c)^2}} = \frac{2x}{2\sqrt{6x^2}} = senh\,(x/2)$

$+ \frac{x}{6x^2} \quad - \frac{x}{\sqrt{6x^2}} = sen\ h^{1} \left(\frac{x}{2}\right)$

10.- $\int \text{Senh}\, 2x\, dx = \int \frac{(ex - e^{-x})}{2} dx$

$= \int \frac{ex - e^{-x})^2}{4} dx - 1/4 \int (ex)2 - 2 + (e - x)2 dx$

$= 1/4 \int e2 - 2 + e - 2x\, dx$

$= 1/4 (1/2\, e2x - 2x - 1/2\, e - 2x) + c$

$= -1/2\, x + 1/4 \frac{(e2x - e - 2x}{2} + c$