UNIVERSIDAD DEL SURESTE

"Pasión por educar"

NOMBRE DEL ALUMNO: CARLOS ANDRES AGUILAR AGUILAR

GRADO:6 TO GRUPO: A

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TEMA: INTEGRALES TRIGONOMETRICAS INVERSAS

MATEMATICAS APLICADA

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CARLOS ANDRÉS AGUILAR AGUILAR

EJERCICIOS 8

$$\int \text{SEN}^{-1}\, 3x^2\, dx \qquad \int x^a dx = \frac{x^{a+1}}{a+1} = a \neq -1$$

$$= \text{ARCSEN}\, 3 \int x^2 dx$$

$$\text{ARCSEN}\, 3\, \frac{x^{2+1}}{2+1} = \boxed{\frac{1}{3}\, \text{ARCSEN}\, 3x^3 + C}$$

$$\int \text{TAN}^{-1} \frac{1}{x^2}\, dx \longrightarrow \text{I. POR PARTES.}$$

$$U = \text{ARCTAN}\, \frac{1}{x^2}, \quad V' = 1$$

$$= x\, \text{ARCTAN}\left(\frac{1}{x^2}\right) - \int \frac{-2x^2}{1+x^4}\, dx$$

$$\longrightarrow \int -\frac{2x^2}{1+x^4}\, dx = -2\left(-\frac{1}{4\sqrt{2}}\left(\ln\left(\ln|2x^2 + 2\sqrt{2}x + 2\right| - 2\,\text{ARCTAN}\left(\sqrt{2}x+1\right) + \frac{1}{4\sqrt{2}}\right.\right.$$

SIMPLIFICO: $\text{ARCTAN}\, x\, \frac{1}{x^2} + 2\left(-\frac{1}{4\sqrt{2}}\left(\ln|2x^2 + 2\sqrt{2}x + 2\right|\right.$

$$\left. - 2\,\text{ARCTAN}\left(\sqrt{2}x+1\right) + \frac{1}{4\sqrt{2}}\left(\ln|2x^2 - 2\sqrt{2}x + 2\right|\right.$$

$+ 2 \arctan\left(\sqrt{2x-1}\right) + C$

$$\int \cos^{-1} 5x \, dx$$

$$\arccos 5x - \int -\frac{5x}{\sqrt{1-25x^2}} \, dx$$

$$\rightarrow \int -\frac{5x}{\sqrt{1-25x^2}} \, dx = \frac{1}{5}\sqrt{1-25x^2}$$

$$= \arccos 5x - \frac{1}{5}\sqrt{1-25x^2} + C$$

$$\int \csc^{-1} 2x^2 \, dx$$

$\rightarrow \operatorname{arccsc} 2 = \frac{\pi}{6}$

$$\operatorname{arccsc} 2 \int x^2 \, dx$$

$$= \frac{\pi}{6}\int x^2 \, dx = \frac{x^{2+1}}{2+1} \quad \frac{x^3}{3} = \frac{\pi}{6}\left(\frac{x^3}{3}\right) 1$$

$$= \frac{\pi x^3}{18} + C$$

$$\int \cot^{-1}\sqrt{2}\,x\,dx \qquad U = \operatorname{arccot}\sqrt{2x}$$
$$U' = 1$$

$$\operatorname{arccot}\sqrt{2x} - \int -\frac{\sqrt{2x}}{2x^2+1}\,dx$$

$$\int -\frac{\sqrt{2x}}{2x^2+1}\,dx = -\frac{1}{2\sqrt{2}}\ln|2x^2+1|$$

$$\operatorname{arccot}(\sqrt{2x}) - \left(-\frac{1}{2\sqrt{2}}\ln|2x^2+1|\right)$$

$$= \operatorname{arccot}\sqrt{2x} + \frac{1}{2\sqrt{2}}\ln|2x^2+1| + C$$

$$\int \operatorname{sen}^{-1}\sqrt{2}\,x^2\,dx$$

$$\operatorname{arcsen}(\sqrt{2})x^2\,dx \rightarrow \operatorname{arcsen}\sqrt{2x}\int x^2\,x^2$$

$$\operatorname{arcsen}(\sqrt{2})\frac{x^{2+1}}{2+2} \rightarrow \frac{1}{3}\operatorname{arcsen}(\sqrt{2})x^3 + C$$