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**Nombre del trabajo: Ejercicio**

**Materia: Matemáticas Aplicada**

**Grado: 6 semestre**

**Grupo: "A"**

$$\int \cos^2 3x \, dx$$

$$\int \frac{1}{2} (1 + \cos 6x) \, dx$$

$$\int \left( \frac{1}{2} + \frac{1}{2} \cos 6x \right) dx = \frac{1}{2} \int dx + \frac{1}{2} \int \cos 6x \, dx$$

$$\frac{x}{2} + \frac{1}{2} \cdot \frac{1}{6} \sin 6x + C$$

$$\boxed{\frac{x}{2} + \frac{1}{12} \sin 6x + C}$$

$$\int \sin^2 x + \cos^2 x \, dx$$

$$\sin^2 x + \cos^2 x = 1$$

$$\int 1 \, dx = \boxed{x + C}$$

$$\textcircled{1} \int \cos 2x dx = \frac{1}{2} \text{SEN } 2x + C$$

$$\textcircled{2} \int \text{SEN } \frac{x}{3} dx = -3 \cos \frac{x}{3} + C$$

$$\textcircled{9} \int \text{TAN } 3x dx = \frac{1}{3} \ln |\sec 3x| + C$$

$$\textcircled{10} \int \frac{dx}{4x^2 + 9} = \frac{1}{3} \text{ARCTAN } \frac{2x}{3} + C$$

$$u^2 = 4x^2$$

$$u = 2x$$

$$a^2 = 9$$

$$a = 3$$

$$\textcircled{11} \int \frac{dx}{\sqrt{4x^2 + 9}} = \text{ARC SEN } \frac{2x}{3} + C$$



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12/02/2020

## INTEGRALES TRIGONOMETRICAS

- Las identidades que se utilizan en la resolución de las integrales trigonométricas de este capítulo o esta unidad son las siguientes:

$$① \rightarrow \text{SEN}^2 X + \text{COS}^2 X = 1$$

$$② \rightarrow 1 + \text{TAN}^2 X = \text{SEC}^2 X$$

$$③ \rightarrow 1 + \text{COT}^2 X = \text{CSC}^2 X$$

$$④ \rightarrow \text{SEN}^2 X = \frac{1}{2} (1 - \text{COS} 2X)$$

$$⑤ \rightarrow \text{COS}^2 X = \frac{1}{2} (1 + \text{COS} 2X)$$

$$⑥ \rightarrow \text{SEN} X \text{COS} X = \frac{1}{2} \text{SEN} 2X$$

$$⑦ \rightarrow \text{SEN} X \text{COS} Y = \frac{1}{2} [\text{SEN} (X-Y) + \text{SEN} (X+Y)]$$

$$⑧ \rightarrow \text{SEN} X \text{SEN} Y = \frac{1}{2} [\text{COS} (X-Y) - \text{COS} (X+Y)]$$

$$⑨ \rightarrow \text{COS} X \text{COS} Y = \frac{1}{2} [\text{COS} (X-Y) + \text{COS} (X+Y)]$$

$$⑩ \rightarrow 1 - \text{COS} X = 2 \text{SEN}^2 \frac{1}{2} X$$

$$⑪ \rightarrow 1 + \text{COS} X = 2 \text{COS}^2 \frac{1}{2} X$$

$$⑫ \rightarrow 1 \pm \text{SEN} X = 1 \pm \text{COS} \left( \frac{1}{2} \pi - X \right)$$

$$\int \text{SEN}^2 X dx = \int \text{SEN}^2 X = \frac{1}{2} (1 - \text{COS} 2X)$$

$$\int \frac{1}{2} (1 - \text{COS} 2X) dx = \int \frac{1}{2} - \frac{1}{2} \text{COS} 2X$$