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**Nombre del trabajo: Ejercicio**

**Materia: Matemáticas Aplicada**

**Grado: 6 semestre**

**Grupo: "A"**

$$1 = \int \sec^2 x \, dx = \tan x = \frac{1}{2}(1 - \cos 2x)$$

$$\int \frac{1}{2}(1 - \cos 2x) \, dx = \int \frac{1}{2} - \frac{1}{2} \cos 2x \, dx$$

$$= \frac{1}{2} \int dx - \frac{1}{2} \int \cos 2x \, dx$$

$$\frac{x}{2} - \frac{1}{2} \sin 2x + C$$

$$\boxed{\frac{x}{2} - \frac{1}{4} \sin 2x + C}$$

$$2 = \int \cos^2 3x \, dx \quad \cos^2 x = \frac{1}{2}(1 + \cos 2x)$$

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

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

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

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

$$3 = \int \sec^2 x + \cos x \, dx \quad \sec^2 x + \cos^2 x = 1$$

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

$$4 = \int (1 + \tan^2 2x) \, dx = \int \sec^2 2x \, dx = \boxed{\frac{1}{2} \tan 2x + C}$$

$$5 = \int (1 + \cot^2 2x) \, dx = \int \csc^2 2x \, dx = \boxed{-\frac{1}{2} \cot 2x + C}$$