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Instrucciones: Resuelva los siguientes ejercicios, debe incluir procedimiento.

1:  $\int \text{Sen}(5x) dx$

$$\int \text{sen} u du = -\cos u + C$$

Desarrollo:

- Derivar  $u$  y completar la integral

$$u = 5x \quad du = 5 dx$$

$$= \frac{1}{5} \int \text{Sen}(5x) 5 dx$$

Integral

$$= \frac{1}{5} \int \text{Sen} u du = \frac{1}{5} (-\cos u) + C = -\frac{1}{5} \cos(5x) + C$$

$$\text{Resultado: } -\frac{1}{5} \cos(5x) + C$$

2:  $\int x \text{Sen}(4x^2) dx$

$$\int \text{sen} u du = -\cos u + C$$

Desarrollo

- Derivar  $u$  y completar la integral

$$u = 4x^2 \quad du = 8x dx$$

$$= \frac{1}{8} \int \text{Sen}(4x^2) 8x dx$$

Integral

$$= \frac{1}{8} \int \text{Sen} u du = \frac{1}{8} (-\cos u) + C = -\frac{1}{8} \cos(4x^2) + C$$

$$\text{Resultado: } -\frac{1}{8} \cos(4x^2) + C$$

3:  $\int \sec ax \tan ax dx$

$$\int \sec u \tan u du = \sec u + C$$

Desarrollo

- Derivar  $u$  y completar la integral

$$u = ax \quad du = a dx$$

$$= \frac{1}{a} \int \sec(ax) \tan(ax) a dx$$

Integral

$$\frac{1}{a} \int \sec u \tan u du = \frac{1}{a} \sec u + C$$

$$\text{Resultado: } \frac{1}{a} \sec(ax) + C$$

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$$4: \int x \csc(4x^2) dx \quad \int \csc u du = \ln|\csc u - \cot u| + C$$

Desarrollo

- Derivar  $u$  y completar la integral

$$u = 4x^2 \quad du = 8x dx$$

$$= \frac{1}{8} \int \csc(4x^2) 8x dx$$

Integral

$$= \frac{1}{8} \int \csc u du = \frac{1}{8} \ln|\csc u - \cot u| + C$$

$$\text{Resultado: } \frac{1}{8} \ln|\csc(4x^2) - \cot(4x^2)| + C$$

$$5: \int \sec(ax) dx \quad \int \sec u du = \ln|\sec u + \tan u| + C$$

Desarrollo

- Derivar  $u$  y completar la integral

$$u = ax \quad du = a dx$$

$$= \frac{1}{a} \int \sec(ax) a dx$$

Integral

$$= \frac{1}{a} \int \sec u du = \frac{1}{a} \ln|\sec u + \tan u| + C$$

$$\text{Resolver} = \frac{1}{a} \ln|\sec(ax) + \tan(ax)| + C$$

$$6: \int \frac{\tan \sqrt{x}}{\sqrt{x}} dx \quad \int \tan u du = -\ln|\cos u| + C$$

Desarrollo

- Derivar  $u$  y completar la integral

$$u = \sqrt{x} = x^{1/2}$$

$$du = \frac{1}{2} x^{1/2 - 2/2} = \frac{1}{2} x^{-1/2} dx = \frac{dx}{2x^{1/2}}$$

$$du = \frac{dx}{2\sqrt{x}}$$

$$= 2 \int \frac{1}{2} \frac{\tan \sqrt{x}}{\sqrt{x}} dx$$

Integral

$$= 2 \int \tan u du = -2 \ln|\cos u| + C$$

$$\text{Resultado: } -2 \ln|\cos(\sqrt{x})| + C$$

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$$7^{\circ} \int x \cot x^2 dx$$

$$\int \cot u du = \ln|\operatorname{sen} u| + C$$

Desarrollo

- Derivar U y completar Integral

$$U = x^2 \quad du = 2x dx$$
$$= \frac{1}{2} \int \cot(x^2) 2x dx$$

Integral

$$= \frac{1}{2} \int \cot u du = \frac{1}{2} (\ln|\operatorname{sen} u|) + C = \frac{1}{2} \ln|\operatorname{sen} u| + C$$

$$\text{Resultado} = \frac{1}{2} \ln|\operatorname{sen}(x^2)| + C$$