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$$1: \int \sin(8x) dx$$

Desarrollo:

- Derivar U y completar integral

$$U = 8x \quad du = 8 dx$$

$$= \frac{1}{8} \int \sin(8x) 8 dx$$

- Integrar

$$= \frac{1}{8} \int \sin U du = -\frac{1}{8} \cos U + C$$

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

$$2: \int x \cos(2x^2) dx$$

Desarrollo

- Derivar U y completar integral

$$U = 2x^2 \quad du = 4x dx$$

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

- Integrar

$$= \frac{1}{4} \int \cos u du = \frac{1}{4} \sin u + C$$

$$\text{Resultado: } = \frac{1}{4} \sin(2x^2) + C$$

$$3: \int \frac{\tan \sqrt{x}}{\sqrt{x}} dx$$

Desarrollo

- Derivar U y completar integral

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

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

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

- Integrar

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

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

4: $\int x^2 \cot(3x^3) dx$

Desarrollo

- Derivar u y completar la integral

$$u = 3x^3 \quad du = 9x^2 dx$$

$$= 1/9 \int \cot(3x^3) 9x^2 dx$$

- Integral

$$= 1/9 \int \cot u du = 1/9 \ln|\operatorname{Sen} u| + C$$

$$\text{Resultado: } = 1/9 \ln|\operatorname{Sen}(3x^3)| + C$$

5: $\int x \operatorname{Sen}(2x^2) dx$

Desarrollo

- Derivar u y completar la integral

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

$$= 1/4 \int \operatorname{Sen}(2x^2) 4x dx = 1/4 (-\cos u) + C = -1/4 \cos u + C$$

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

6: $\int \tan(2x) dx$

Desarrollo

- Derivar u y completar la integral

$$u = 2x \quad du = 2 dx$$

$$= 1/2 \int \tan(2x) 2 dx$$

Integral

$$= 1/2 \int \tan u du = 1/2 (-\ln|\cos u|) + C = -1/2 \ln|\cos u| + C$$

$$\text{Resultado: } = -1/2 \ln|\cos(2x)| + C$$

7: $\int 3x^2 \tan(x^3) dx$

Desarrollo

- Derivar u y completar la integral

$$u = x^3 \quad du = 3x^2 dx$$

Integral

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

$$\text{Resultado: } = -\ln|\cos(x^3)| + C$$

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$$8: \int x \sec 10x^2 dx$$

Desarrollo

- Derivar u y completar la integral

$$u = 10x^2 \quad du = 20x dx$$

$$= 1/20 \int \sec(10x^2) 20x dx$$

- Integral

$$= 1/20 \int \sec u du = 1/20 \ln|\tan u + \sec u| + c$$

$$\text{Resultado: } = 1/20 \ln|\tan(10x^2) + \sec(10x^2)| + c$$