"Tarea 2.1"

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Grupo: 23.

Calcular las siguientes integrales:

① $\int \cot 5x\,dx = \int \frac{\cos 5x}{\operatorname{sen} 5x}\,dx = \frac{1}{5}\int \frac{dv}{v} = \frac{1}{5}\ln|v| + C$

$v = \operatorname{sen} 5x$

$dv = 5(\cos 5x)\,dx$

$\frac{dv}{5} = \cos 5x\,dx$

$= \frac{1}{5}\ln \operatorname{sen} 5x + C$

$\left\{ r\ln a = \ln a^r \right\}$

$= \ln(\operatorname{sen} 5x)^{1/5} + C$

$= \ln \sqrt[5]{\operatorname{sen} 5x} + C$

$\therefore \int \cot 5x\,dx = \ln \sqrt[5]{\operatorname{sen} 5x} + C$ //

② $\int (3x)^6\,dx = \frac{1}{3}\int v^6\,dv = \frac{1}{3}\left(\frac{v^7}{7}\right) + C = \frac{v^7}{21} + C$

$v = 3x$

$dv = 3\,dx$

$dx = \frac{dv}{3}$

$= \frac{(3x)^7}{21} + C$ //

$\int (3x)^6\,dx = \frac{(3x)^7}{21} + C$ //

③ $\int \frac{1}{3x+8}\,dx = \frac{1}{3}\int \frac{1}{u}\,du = \frac{1}{3}\ln|u|+C = \frac{1}{3}\ln|3x+8|+C$

$u = 3x+8$

$du = 3\,dx$

$dx = \frac{du}{3}$

$= \ln(3x+8)^{1/3}+C$

$= \ln\sqrt[3]{3x+8}+C$ //

$\int \frac{1}{3x+8}\,dx = \ln\sqrt[3]{3x+8}+C$ //

④ $\int \tan 8x\,dx = \int \frac{\operatorname{sen} 8x}{\cos 8x}\,dx = -\frac{1}{8}\int \frac{du}{u} = -\frac{1}{8}\ln|u|+C$

$u = \cos 8x$

$du = (-\operatorname{sen} 8x)(8)\,dx$

$\frac{du}{8} = -\operatorname{sen} 8x\,dx$

$= -\frac{1}{8}\ln|\cos 8x|+C$

$= -\ln(\cos 8x)^{\frac{1}{8}}+C$

$= -\ln\sqrt[8]{\cos 8x}+C$ //

$\int \tan 8x\,dx = -\ln\sqrt[8]{\cos 8x}+C$ //

⑤ $\int 7\,dx = 7\int dx = 7x+C$ //

$\int 7\,dx = 7x+C$ //