UNIVERSIDAD DEL SURESTE

"Pasión por educar"

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examen final

uds

EXAMEN FINAL

1- $\int \text{SEN}-1\ 3x2\ dx$

$\sqrt{1-(3)^2(x)^2} + x\sin -= (3x) + C$

$\frac{\sqrt{1-9x^2}}{3} + x\sin-1\ (3x) + C$

factorizando

$\sqrt{1}\ 3 - 3x^2 + \frac{x}{sen}\ 3x + C$

2- $\int \cos -1\ 5x\,dx$

$x\cos-1\ (5x) - \frac{\ln|(5)^2\ (x)^2 + 1 + C}{2\ (5)}$

$= \frac{25x^2+1+C}{10}$

factorizando

$\boxed{25/10\,x^2+1+C}$

3- $\int \tan^{-1} 1/x^2 \, dx$

$x \tan^{-1}(1x) - \frac{\ln|(1)^2(x^2)+1+c}{2(1)}$

$\frac{\ln|\cancel{1}\, x^2+1+c}{2}$

factorizado

$\boxed{x^2/2+1+c}$

4- $\int \cos 3\ 2x/3 \, dx$

$1/3 \int \frac{\cos^3 2x}{3} \, dx = 1/3 - \int \cos^3 2x \, dx$

$= u = 2x$

$1/3 \int \cos^3 1/2 \, u\,du$

$1/3 \cdot 1/2 \int \cos^2 u \cos u\,du$

$\cos^2 x = 1 - \sin^2 x \quad u = \sin$

$1/3 \cdot 1/2 (\sin 2x \cdot \sin^3 2x)$

$= 1/6 \left(\sin 2x - \frac{\sin^3 2x}{3}\right) + c$

5 - $\int \sec 4 \; 2x \, dx$

$1/2 \int \sec^4 (u) \, du$

$\int \sec^4 u du = \int sen^2 (u) \sec^2 (u) du)$

$1/2 (\int \sec^2 u \sec^2 u du) - \sec^2 x = 1 + \tan^2$

$1/2 \int 1 + u^2 du = 1/2 \int 1 du 1 \int u^2 du$

$\int 1 du = x = \int u^2 du = x^3/3 = 1/2 (v + v^3/3)$

$\boxed{= 1/2 (\tan 2x + \tan^3 (2x)/3 + C}$

6 - $\int \csc - 1 \, 2x \, 2 \, dx$

$\ln| 2 (\sqrt{(5)^2 x^2 - 1 + 5x}) + \csc^{-1} (5x)$
$+ C$

$(\frac{\sqrt{25x^2 - 4x}}{5}) + x \csc^{-1} (5x) + C$

factorizando

$\boxed{25/5x^2 - 4x + \frac{x}{\csc} (5x) + C}$

7 - $\int \cot^{-1} \sqrt{2}\, x\, dx$

$\dfrac{\ln|\sqrt{2}\, x^2 + 1}{2(\sqrt{2})} + x \cot^{-1}(\sqrt{2}\, x) + C$

$\dfrac{\ln|\cancel{1}\, x^2 + 1}{2} + x \cot^{-1}(1x) + C$

factorizando

$\boxed{x^2 / 2 + 1 + x \cot^{-1}(1x + C)}$

8 - $\int \operatorname{sen}^{-1} \sqrt{2}\, x\, 2\, dx$

$\dfrac{\sqrt{1 - (\sqrt{2})^2 x^2}}{\sqrt{2}} + x \sin^{-1}(\sqrt{2}\, x) + C$

$\dfrac{1 - \cancel{1}\, x^2}{1} + x \sin^{-1}(x) + C$

factorizando

$\boxed{1 / 1 - x^2 + \frac{x}{\sin}(x) + C}$