UDS UNIVERSIDAD DEL SURESTE

"Pasión por educar"

“MATERIA”MATEMATICA APLICADA

NOMBRE DEL DOCENTE. JUAN JOSE OJEDA

PRESENTA: EXAMEN

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.

QUINTO SEMESTRE

TEC.EN ENFERMERIA

ESCOLARIZADO

MATEMATICAS APLICADA

EXAMEN

1. $\int_{-2}^{2} \text{Sen}^2 x\,dx$

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

$= \frac{-\cos x \,\text{Sen}\, x}{2} + \frac{x}{2} + c$

$= \frac{x - \frac{\text{Sen}\,2x}{2}}{2}\Big]_{-2}^{2} + c$

$= \frac{-\text{Sen}\,4 - 4}{2} = 2{,}378$

2. $\int_{-3}^{3} \text{Sen}\,3x\,/3\,dx = 3\int_{-3}^{3} \text{Sen}\,u\,du = \int_{-3}^{3} (1-\cos^2(u))\,du$

$= \frac{v^3}{3} - v = \cos^3 4 - \cos 4$ ← Continuación.

$= \cos^3 \frac{x}{3} - 3\cos\frac{x}{3}\Big]_{-3}^{3} = 0$

$= \int_{-3}^{3} (v^2 - 1)\,dv = \int_{-3}^{3} v^2\,dv - \int_{-3}^{3} 1\,dv$

3. $\int_{\pi/2}^{\pi} \text{Sen}^2 x + \cos 2x\,dx$

$= \int_{\pi/2}^{\pi} 1\,dx = x\Big]_{\pi/2}^{\pi} = 1.57$

4. $\int_{\pi/2}^{\pi} \cos^3 2x/3\,dx = \int_{\pi/2}^{\pi} \cos^3 u\,d = \int_{\pi/2}^{\pi} \cos u\,(1-\text{sen}^2 u)\,du$

$= \int_{\pi}^{\pi} (1-v^2)\,dv = \int_{\pi/2}^{\pi} 1\,d - \int v^3 dv$

$= v + \frac{v^3}{3} = \text{sen}\,u - \frac{\text{sen}\,u^3}{3}$

$= \frac{3\,\text{Sen}\left(\frac{2x}{3}\right)}{2} - \frac{\text{Sen}\left(\frac{2x}{3}\right)}{2}\Big]_{\pi}^{\pi} = 0$

2.

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5 $\int_{-\pi/2}^{\pi} \operatorname{Sen}^4 2x\,dx = \int_{-\pi/2}^{\pi} \sec^2 u\,(\tan^2 u + 1)\,du$

$= \int_{-\pi/2}^{\pi} (v^2+1)\,dv \Rightarrow \frac{v^3}{3} + v = \frac{\tan^3 y}{3} + \tan u$

$= \frac{\tan^2(2x)}{6} + \frac{\tan 2x}{2} \Big]_{-\pi/2}^{\pi}$

$u = 2x \quad du = 2$
$dx = 1/2\,du$
$v = \tan u \quad \frac{dv}{du} = \sec^2 u$
$du = \frac{1}{\sec 4}\,dv$

6 $\int_{-\frac{\pi}{2}}^{\pi} \operatorname{Sen} 2x \cos 3x\,dx = \int_{-\pi/2}^{\pi} \frac{\operatorname{Sen} 5x\,dx - \operatorname{Sen} x\,dx}{2}$

$= \frac{1}{2} \int_{\pi/2}^{\pi} \operatorname{Sen} 5x\,dx - \frac{1}{2} \int_{-\pi/2}^{\pi} \operatorname{Sen} x\,dx$

$= \frac{1}{2} \left[-\frac{\cos 5x}{5} - \frac{\cos x}{2} \right]_{-\pi/2}^{\pi}$

$= \frac{\cos 5x - 5\cos x}{10} \Big]_{-\pi/2}^{\pi} = \frac{-2}{5}$

$u = 5x \quad \frac{du}{dx} = 5$
$dx = \frac{1}{5}\,du$

7 $\int_{-3}^{3} (1 + \cos 3x)\,\frac{3}{2}\,dx = \int_{-3}^{3} \frac{3(\cos(3x) + 1)\,dx}{2}$

$= \frac{3}{2} \int \cos 3x\,dx + \frac{3}{2} \int 1\,dx$

$= \frac{3}{2} \int \cos 3x\,dx + \frac{3}{2} \int 1\,dx$

$= \frac{3}{2} \frac{\operatorname{Sen} 3x}{3} - x \Big]_{-3}^{3} = \frac{\operatorname{Sen} 3x}{2} + \frac{3x}{2} \Big]_{-3}^{3}$

$= \operatorname{Sen} 9 + 9 = 9{,}412$

8 $\int_{-4}^{1} 1 - \operatorname{Sen} 2x\,dx = \int_{-4}^{1} dx - \int \operatorname{sen} 2x\,dx = x - \cos u \Big]_{-4}^{1}$

$= x - \left(-\cos \frac{2x}{2}\right) \Big]_{-4}^{1}$

$= \cos \frac{2x}{2} + x \Big]_{-4}^{1}$

$= \frac{\cos 8 \cos 2 + 10}{2} = 4.86$

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