UDS UNIVERSIDAD DEL SURESTE

"Pasión por educar"

EXAMEN

- Materia: MATEMATICA APLIcada
- Carrera: TEC. ENFERMERIA
- Semestre/
- BRENDA MAYARI ALVARADO BRAVO

Brenda Mayari Alvarado Bravo

① $\int (2x^2 - 5x + 3)^3 \, dx$ | $R = \frac{27x^4}{4} + 27x^3 - \frac{81x^2}{2} + 27x + C$

$\int (2x - 5x + 3)^3 \, dx$

$\int 27x^3 \, dx + \int 81x^2 \, dx - \int 81x \, dx + \int 27 \, dx$

$\int 27x^3 \, dx = \frac{27x^4}{4}$

$\int 81x^2 \, dx = 27x^3$

② $\int (x^3 + 5x^2 - 4) \, dx$ $R = \frac{x^4}{4} + \frac{5x^3}{3} - 4x + C$

$\int x^3 \, dx + \int 5x^2 \, dx - \int 4 \, dx$

$\int x^3 \, dx = \frac{x^4}{4}$

$\int 5x^2 \, dx = \frac{5x^3}{3}$

$\int 4 \, dx = 4x = \frac{x^4}{4} + \frac{5x^3}{3} - 4x + C$

Brenda Nayari Alvarado Bravo

③. $\int (x^2)\sqrt{x^3+2}$ $= \frac{1}{4}\int \frac{x^2\,dx}{(x^3+2)}$

$\frac{1}{4}\int x^2(x^3+2)^{1/2}\,dx$ $= \frac{1}{4}\int (x^4+2x)\,dx$

$\frac{1}{4}\int x^4\,dx + \frac{1}{4}\int (2x)\,dx$ $\frac{1}{4}\frac{x^5}{5} + \frac{1}{4}\frac{2x^2}{2} + C$

R $\boxed{\frac{x^5}{20} + \frac{1}{4}x^2 + C}$

④. $\int \sqrt[3]{(1-x^2)}\,x\,dx$

$\boxed{R = -\frac{3}{8}(1-x^2)\frac{4}{3} + C}$

$= \int \frac{\sqrt[3]{u}}{2}\,du$

$\frac{1}{2}\cdot\int \sqrt[3]{u}\,du$

$\frac{1}{2}\,\frac{\frac{1}{u3}+1}{\frac{1}{3}+1} = \frac{3}{8}(1-x^2)\frac{4}{3}$

Brenda Hazar Alvarado Brave

⑤. $\int \frac{(1+x)^2}{\sqrt{x}}$

$\int (1+x)^2 \, dx \sqrt{x}$

$R = 2\sqrt{x} + \frac{2}{5}x^{\frac{5}{2}} + C$

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

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

⑥. $\int \frac{\sqrt{x}}{x^2} \, dx$ $R = \frac{2}{\sqrt{x}} + C$ $\int x^a \, dx = \frac{x^{+1}}{a+1}$

$\int \frac{\sqrt{x}}{x^2} \, dx$ $\frac{1}{3}$ $x2$

$R = \frac{2}{\sqrt{x}} + C$

Brenda Maxarf Alvarado Brave

7. $\int \frac{2x^3}{\sqrt[3]{x^2}}\,dx$

$\int \frac{2x^3}{\sqrt[3]{x^2}}\,dx$

$= 2\cdot\int \frac{x^3}{\sqrt[3]{x^2}}\,dx$

$= 2\cdot\int \frac{x^3}{x^{\frac{2}{3}}}\,dx$

$2\cdot \frac{\frac{7}{3}+1}{\frac{2}{3}+1}$ $\quad \frac{3}{5}\times\frac{10}{3}$

$R = \frac{3}{5}x\ \frac{10}{3} + C$

8. $\int \frac{dx}{4x^2+9}$

$\int \frac{1}{4x^2+9}\,dx$

$= \int \frac{1}{6(u^2+1)}\,du$

$\frac{1}{6}\arctan(u)$

$\frac{1}{6}\arctan\left(\frac{2}{3}x\right)$

$R = \frac{1}{6}\arctan\left(\frac{2}{3}x\right) + C$

Brenda Naxari Alvarado Bravo

9.- $\int \frac{dx}{x^2 10x + 30}$

$$\frac{dx}{x^2 \cdot 10x + 30}$$

$$x^2 \cdot 10x + 30 = 10x^3 + 30 \quad = R = \frac{dx}{10x^3 + 30}$$

(10).- $\int \frac{dx}{9x^2 - 16}$

$$\frac{dx}{9x^2 - 16} = \frac{dx}{65}$$

$$9^2 - 16 = 65$$