



**Nombre de alumno: luis jaime madrid
sanchez**

**Nombre del profesor: juan jose ojeda
trujillo**

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PASIÓN POR EDUCAR

Materia: matemáticas aplicadas

Grado: 6to semestre

Grupo: A

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$$1 \int (2x^2 - 5x + 3)^3 dx$$

$$\downarrow$$

$$(2x^2 - 5x + 3)(2x^2 - 5x + 3)(2x^2 - 5x + 3)$$

$$4x^4 - 10x^3 + 6x^2$$

$$- 10x^3 + 25x^2 - 15x$$

$$6x^2 - 15x + 9$$

$$(4x^4 - 20x^3 + 47x^2 - 30x + 9)(2x^2 - 5x + 3)$$

$$8x^6 - 40x^5 + 94x^4 - 60x^3 + 78x^2$$

$$- 20x^5 + 100x^4 - 235x^3 + 150x^2 - 45x$$

$$12x^4 - 60x^3 + 74x^2 - 90x + 27$$

$$8x^6 - 60x^5 + 206x^4 - 355x^3 + 309x^2 - 735x + 27$$

$$8 \int x^6 dx - 60 \int x^5 dx + 206 \int x^4 dx - 355 \int x^3 dx + 309 \int x^2 dx - 735 \int x dx + 27 \int dx$$

$$\frac{8}{7} x^7 - \frac{60}{6} x^6 + \frac{206x^5}{5} - \frac{355x^4}{4} + \frac{309x^3}{3} - \frac{735x^2}{2} + 27x + C$$

$$2 \int \frac{x^3 + 5x^2 - 4}{x^2} dx = \int \left(\frac{x^3}{x^2} + \frac{5x^2}{x^2} - \frac{4}{x^2} \right) dx$$

$$= \int x dx + \int 5 dx - \int \frac{4}{x^2} dx$$

$$= \int x dx + 5 \int dx - \int 4x^{-2} dx$$

$$= x^2 + 5x + \frac{4x^{-1}}{-1} + C$$

$$= \frac{x^2}{2} + 5x + \frac{4}{x} + C$$

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

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

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

$$= \frac{1}{4} \int x^3 dx + \frac{1}{4} \int 2x dx$$

$$\frac{1}{4} \frac{x^4}{4} + \frac{1}{4} \frac{2x^2}{2} + C$$

$$= \frac{x^4}{16} + \frac{1}{4} x^2 + C$$

$$4 \int 3\sqrt{(1-2x)} x dx = \int 3\sqrt{x-x^3} dx$$

$$= \int (x-x^3)^{1/2} dx$$

$$= \frac{(x-x^3)^{3/2}}{3/2} + C$$

$$= \frac{2}{3} (x-x^3)^{3/2} + C$$

$$= \frac{2}{3} (x-x^3)^{3/2} + C$$

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

$$5 \int \frac{(1+x)^2}{\sqrt{x}} = \int \frac{1+2x}{\sqrt{x}} = \int \frac{1+2x}{x^{1/2}}$$

$$= \int 1x^0 x^{-1/2} = \int x dx + 2 \int x^{-1/2} dx = \frac{x^2}{2} + 2 \frac{x^{1/2}}{1/2}$$

$$= x^2 + 4 \sqrt{x} + C$$

$$\begin{aligned} 6 \quad \int \frac{\sqrt{x}}{x^2} &= \int \sqrt{\frac{1}{x}} = \left(\frac{1}{x}\right)^{1/2} + C \\ &= \frac{1\left(\frac{1}{x}\right)^{3/2} + C}{\frac{3}{2}} \\ &= \frac{2}{3} \sqrt{\left(\frac{1}{x}\right)^3} + C \end{aligned}$$

Luis Jaime Madrid Sanchez