



# PREUNIVERSITARIO EL INGE

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## EJERCICIOS RESUELTOS

### INTEGRALES BÁSICAS POR FÓRMULA

$$1) \int \left( \frac{4x^2 - 2\sqrt{x}}{x} \right) dx$$

$$\int \frac{4x^2}{x} dx - \int \frac{2\sqrt{x}}{x} dx$$

$$4 \int x dx - 2 \int x^{1/2-1} dx$$

$$4 \int x dx - 2 \int x^{-1/2} dx$$

$$\frac{4x^2}{2} - 2 \left( \frac{2}{1} \right) x^{1/2} + C$$

$$2x^2 - 4\sqrt{x} + C //$$

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

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

$$\frac{1}{2} \int x^4 dx - 5 \int x^{-2} dx$$

$$\frac{1}{2} \left( \frac{x^5}{5} \right) - 5 \left( \frac{x^{-1}}{-1} \right) + C$$

$$\frac{x^5}{10} + \frac{5}{x} + C //$$



$$3) \int \left( x^2 - 3 + \frac{1}{x^2 + 100} \right) dx$$

$$\int x^2 dx - \int 3 dx + \int \frac{dx}{x^2 + 100}$$

$$\int x^2 dx - 3 \int dx + \int \frac{dx}{x^2 + 100}$$

$$\frac{x^3}{3} - 3x + \frac{1}{10} \operatorname{arctg} \left( \frac{x}{10} \right) + C //$$

$$4) \int (2x^2 - 3)^2 dx$$

$$\int (4x^4 - 12x^2 + 9) dx$$

$$\int 4x^4 dx - \int 12x^2 dx + \int 9 dx$$

$$4 \int x^4 dx - 12 \int x^2 dx + 9 \int dx$$

$$\frac{4x^5}{5} - \frac{12x^3}{3} + 9x + C$$

$$\frac{4x^5}{5} - 4x^3 + 9x + C //$$

$$5) \int [x - \operatorname{Sen}(x) \cdot \operatorname{Ctg}(x)] dx$$

$$\int \left[ x - \frac{\operatorname{Cos}(x)}{\operatorname{Sen}(x)} \right] dx$$

$$\int x dx - \int \operatorname{Cos}(x) dx$$

$$\frac{x^2}{2} - \operatorname{Sen}(x) + C //$$



$$6) \int \left( \frac{2x^7 - \sqrt{x} - 7x}{x^2} \right) dx$$

$$\int \frac{2x^7 x^5}{x^2} dx - \int \frac{\sqrt{x}}{x^2} dx - \int \frac{7x^1}{x^2} dx$$

$$2 \int x^5 dx - \int x^{-3/2} dx - 7 \int \frac{dx}{x}$$

$$\frac{2x^6}{6} - \left( \frac{-2}{1} \right) x^{-1/2} - 7 \ln(x) + C$$

$$\frac{x^6}{3} + \frac{2}{\sqrt{x}} - 7 \ln(x) + C //$$

$$7) \int \left( \frac{1 + \cos^2 x}{\cos^2 x} \right) dx$$

$$\int \frac{dx}{\cos^2 x} + \int \frac{\cos^2 x}{\cos^2 x} dx$$

$$\int \sec^2 x dx + \int dx$$

$$\tan(x) + x + C //$$

$$8) \int \frac{dx}{\sqrt{16-x^2}}$$

$$\arcsin\left(\frac{x}{4}\right) + C //$$

$$9) \int \left( \frac{x^4}{5} - \frac{1}{\sqrt{x}} \right) dx$$

$$\int \frac{x^4}{5} dx - \int \frac{dx}{\sqrt{x}}$$

$$\frac{1}{5} \int x^4 dx - \int x^{-1/2} dx$$

$$\frac{1}{5} \left( \frac{x^5}{5} \right) - \left( \frac{2}{1} \right) x^{1/2} + C$$

$$\frac{x^5}{25} - 2\sqrt{x} + C //$$



$$10) \int \left( \frac{2a}{\sqrt{x}} - \frac{b}{x^2} + 3c^2 \sqrt[3]{x^2} \right) dx$$

$$\int \frac{2a}{\sqrt{x}} dx - \int \frac{b}{x^2} dx + \int 3c^2 x^{2/3} dx$$

$$2a \int x^{-1/2} dx - b \int x^{-2} dx + 3c^2 \int x^{2/3} dx$$

$$2a \left( \frac{2}{1} \right) x^{1/2} - b \left( \frac{x^{-1}}{-1} \right) + 3c^2 \left( \frac{3}{5} \right) x^{5/3} + C$$

$$4a\sqrt{x} + \frac{b}{x} + \frac{9c^2 \sqrt[3]{x^5}}{5} + C //$$

ALEXIS TUTORIAS

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