# CALCUL INTÉGRAL

Primitives de fonctions usuelles – Série 1

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https://bit.ly/3ZF3ThE

Calcule :

(1) $\int (5x^2 - 8x + 3)\,dx$ $= \frac{5x^3}{3} - 8\frac{x^2}{2} + 3x + C$

$= \frac{5x^3}{3} - 4x^2 + 3x + C$

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

$= \frac{1}{3x^4} + C$

(3) $\int (2x - 6)\,dx$ $= 2\frac{x^2}{2} - 6x + C$

$= x^2 - 6x + C$

(4) $\int (9 + x)^2\,dx$ $= \int (81 + 18x + x^2)\,dx$

$= 81x + 18\frac{x^2}{2} + \frac{x^3}{3} + C$

$= 81x + 9x^2 + \frac{x^3}{3} + C$

(5) $\int (1 + 3t).t^2\,dt$ $= \int (t^2 + 3t^3)\,dt$

$= \frac{t^3}{3} + 3.\frac{t^4}{4} + C$

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

$= \frac{x^2}{2} + 4.\ln|x| + C$

(7) $\int \frac{1}{u\sqrt{u}}du = \int \frac{1}{u \cdot u^{1/2}}du = \int \frac{1}{u^{3/2}}du = \int u^{-3/2}du$

$= \frac{u^{-1/2}}{-1/2} + C = \frac{-2}{\sqrt{u}} + C$

(8) $\int \frac{x^2+4x-3}{\sqrt{x}}dx = \int \left(x^{3/2} + 4.x^{1/2} - 3.x^{-1/2}\right)dx$

$= \frac{x^{5/2}}{5/2} + 4.\frac{x^{3/2}}{3/2} - 3.\frac{x^{1/2}}{1/2} + C$

$= \frac{2}{5}\sqrt{x^5} + \frac{8}{3}\sqrt{x^3} - 6\sqrt{x} + C$

(9) $\int \left(\sqrt{x} + \frac{1}{3\sqrt{x}}\right)dx = \int \left(x^{1/2} + \frac{1}{3}.x^{-1/2}\right)dx$

$= \frac{x^{3/2}}{3/2} + \frac{1}{3}.\frac{x^{1/2}}{1/2} + C$

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

(10) $\int \left(1 - \frac{x}{4}\right)dx = x - \frac{x^2}{8} + C$

(11) $\int \frac{-1}{2x}dx = -\frac{1}{2}\int \frac{1}{x}dx$

$= -\frac{1}{2}\ln|x| + C$

(12) $\int \left(7\sin x - e^x\right)dx = -7.\cos x - e^x + C$

(13) $\int \left(\cos x + \pi\right)dx = \sin x + \pi x + C$