CALCUL INTÉGRAL

Primitives de fonctions usuelles – Série 2

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https://bit.ly/3ZF3ThE

Calcule :

(1) $\frac{1}{2}\int 2(9+2x)^2\,dx$ $= \frac{1}{2}\,\frac{(9+2x)^3}{3} + C$

(2) $\frac{1}{3}\int 3\cos(3x+4)\,dx$ $= \frac{1}{3}\sin(3x+4) + C$

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

(4) $-1\int -\cos(1-x)\,dx$ $= -\sin(1-x) + C$

(5) $\frac{1}{7}\int \frac{1\cdot 7}{7x+5}\,dx$ $= \frac{1}{7}\cdot \ln|7x+5| + C$

(6) $-\frac{1}{5}\int \frac{1\cdot(-5)}{\sqrt{2-5x}}dx$ $= -\frac{1}{5}\int -5\cdot(2-5x)^{-1/2}dx$

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

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

(7) $\frac{1}{2}\int \frac{\cos\sqrt{x}}{\sqrt{x}}dx$ $= 2\cdot\sin\sqrt{x}+C$

(8) $\int \frac{e^x}{2+e^x}dx = \ln|2+e^x|+C$

(9) $\frac{1}{2}\int \frac{2x}{x^2-1}dx = \frac{1}{2}\ln|x^2-1|+C$

(10) $\int \frac{1+\cos x}{x+\sin x}dx = \ln|x+\sin x|+C$

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

$= \frac{1}{3}\cdot\frac{(1+x^3)^{1/2}}{1/2}+C$

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

(12) $-1\int \frac{1}{x^2}\left(1+\frac{1}{x}\right)^4 dx$ $= -\frac{\left(1+\frac{1}{x}\right)^5}{5} + C$

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

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

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

(14) $-1\int -\sin x.\cos^5 x\,dx$ $= -\frac{\cos^6 x}{6} + C$

(15) $-\frac{1}{2}\int -2\sqrt{-2x+8}\,dx$ $= -\frac{1}{2}\int -2.(-2x+8)^{1/2}dx$

$= -\frac{1}{2}\cdot\frac{(-2x+8)^{3/2}}{3/2} + C$

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

(16) $\int \frac{\tan^3 x}{\cos^2 x}dx$ $= \frac{\tan^4 x}{4} + C$

(17) $\frac{1}{3}\int 3.\sqrt[4]{(2+3x)^5}\,dx$ $= \frac{1}{3}\int 3.(2+3x)^{5/4}dx$

$= \frac{1}{3}\cdot\frac{(2+3x)^{9/4}}{9/4} + C$

$= \frac{4}{27}\sqrt[4]{(2+3x)^9} + C$

(18) $2 \cdot \int \frac{\left(1+\sqrt{x}\right)^6}{2\cdot\sqrt{x}}\,dx = 2 \cdot \frac{(1+\sqrt{x})^7}{7} + C$

(19) $\frac{1}{3}\int \frac{3\cdot(x^2+2x)}{\sqrt[3]{x^3+3x^2+1}}\,dx = \frac{1}{3}\cdot\int (3x^2+6x)\cdot(x^3+3x^2+1)^{-1/3}\,dx$

$$= \frac{1}{3}\cdot\frac{(x^3+3x^2+1)^{2/3}}{2/3} + C$$

$$= \frac{1}{2}\cdot\sqrt[3]{(x^3+3x^2+1)^2} + C$$

(20) $\int (8x-2)\sqrt{3-x+2x^2}\,dx = 2\cdot\int (4x-1)\cdot(3-x+2x^2)^{1/2}\,dx$

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

$$= \frac{4}{3}\sqrt{(3-x+2x^2)^3} + C$$