Calcul 2 : Feuille de formules

Dérivées de base

$$\frac{d}{dx}c = 0$$

$$\frac{d}{dx}x^n = nx^{n-1}, \quad \text{si } n \neq 0$$

$$\frac{d}{dx}e^x = e^x$$

$$\frac{d}{dx}a^x = a^x \ln(a)$$

$$\frac{d}{dx}\ln(x) = \frac{1}{x}$$

$$\frac{d}{dx}\log_a(x) = \frac{1}{x\ln(a)}$$

$$\frac{d}{dx}\sin(x) = \cos(x)$$

$$\frac{d}{dx}\cos(x) = -\sin(x)$$

$$\frac{d}{dx}\tan(x) = \sec^2(x)$$

$$\frac{d}{dx}\cot(x) = -\csc^2(x)$$

$$\frac{d}{dx}\sec(x) = \sec(x)\tan(x)$$

$$\frac{d}{dx}\csc(x) = -\csc(x)\cot(x)$$

$$\frac{d}{dx}\arcsin(x) = \frac{1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx}\arccos(x) = \frac{-1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx}\arctan(x) = \frac{1}{1+x^2}$$

$$\frac{d}{dx}\text{arccot}(x) = \frac{-1}{1+x^2}$$

$$\frac{d}{dx}\text{arcsec}(x) = \frac{1}{x\sqrt{x^2-1}}$$

$$\frac{d}{dx}\text{arccsc}(x) = \frac{-1}{x\sqrt{x^2-1}}$$

Intrégrales de base

$$\int x^k dx = \frac{x^{k+1}}{k+1} + C, \quad \text{si } k \neq -1$$

$$\int \frac{1}{x}dx = \ln|x| + C$$

$$\int \cos(x)dx = \sin(x) + C$$

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

$$\int \tan(x)dx = -\ln|\cos(x)| + C$$

$$\int \cot(x)dx = \ln|\sin(x)| + C$$

$$\int \sec(x)dx = \ln|\sec(x) + \tan(x)| + C$$

$$\int \csc(x)dx = -\ln|\csc(x) + \cot(x)| + C$$

$$\int \sec^2(x)dx = \tan(x) + C$$

$$\int \csc^2(x)dx = -\cot(x) + C$$

$$\int \sec(x)\tan(x)dx = \sec(x) + C$$

$$\int \csc(x)\cot(x)dx = -\csc(x) + C$$

$$\int e^x dx = e^x + C$$

$$\int a^x dx = \frac{a^x}{\ln(a)} + C$$

$$\int \frac{1}{\sqrt{1-x^2}}dx = \arcsin(x) + C$$

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

$$\int \frac{1}{x\sqrt{x^2-1}}dx = \text{arcsec}(x) + C$$

Identités trigonométriques

$$\sin^2(x) + \cos^2(x) = 1$$

$$1 + \tan^2(x) = \sec^2(x)$$

$$1 + \cot^2(x) = \csc^2(x)$$

$$\sin^2(x) = \frac{1-\cos(2x)}{2}$$

$$\cos^2(x) = \frac{1+\cos(2x)}{2}$$

$$\sin(x)\cos(x) = \frac{1}{2}\sin(2x)$$

$$\sin(x)\cos(y) = \frac{1}{2}\Big(\sin(x-y) + \sin(x+y)\Big)$$

$$\sin(x)\sin(y) = \frac{1}{2}\Big(\cos(x-y) - \cos(x+y)\Big)$$

$$\cos(x)\cos(y) = \frac{1}{2}\Big(\cos(x-y) + \cos(x+y)\Big)$$

Nicolas Bouffard
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