Département de mathématiques – Cégep de Saint-Laurent
Mathématiques appliquées à la construction 2 – 201-714
Hiver 2008 – Professeur : Yannick Delbecque

Formulaire calcul différentiel et intégral

Dérivée

$$\frac{d\,c}{dx} = 0 \qquad \frac{d}{dx}\left(f(x)g(x)\right) = f'(x)g(x) + f(x)g'(x)$$

$$\frac{d\,cf(x)}{dx} = cf'(x) \qquad \frac{d}{dx}\left(f(x) + g(x)\right) = f'(x) + g'(x)$$

$$\frac{d\,x^a}{dx} = ax^{(a-1)} \qquad \frac{d}{dx}\left(\frac{f(x)}{g(x)}\right) = \frac{f'(x)g(x) - f(x)g'(x)}{\left(g(x)\right)^2}$$

$$\frac{d\,b^x}{dx} = b^x \ln(b) \qquad \frac{d\log_b(x)}{dx} = \frac{1}{x\ln b}$$

$$\frac{d\,\mathrm{e}^x}{dx} = \mathrm{e}^x \qquad \frac{d\ln(x)}{dx} = \frac{1}{x}$$

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

Règle de chaine $\frac{d}{dx}\left(g(f(x))\right) = g'(f(x))f'(x)$

Intégrale indéfinie

$$\int 0\,dx = C \qquad \int x^a\,dx = \frac{x^{a+1}}{a+1} + C \quad (a \neq -1)$$

$$\int c\,dx = cx + C \qquad \int \frac{1}{x}\,dx = \ln(x) + C$$

$$\int \mathrm{b}^x\,dx = \frac{\mathrm{b}^x}{\ln(b)} + C \qquad \int cf(x)\,dx = c\int f(x)\,dx$$

$$\int \mathrm{e}^x\,dx = \mathrm{e}^x + C \qquad \int f(x) + g(x)\,dx = \int f(x)\,dx + \int g(x)\,dx$$

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

Méthode de substitution $\int g(f(x))f'(x)\,dx = \int g(u)\,du$ si $u = f(x)$, $du = f'(x)\,dx$