UNIVERSITÉ de Picardie Jules Verne

FACULTE des SCIENCES

FORMULAIRE

Développements Limités en 0

$$(1+x)^{\alpha} = 1+\alpha x+\frac{\alpha(\alpha-1)}{2!}x^2+...+\frac{\alpha(\alpha-1)...(\alpha-n+1)}{n!}x^n+x^n\varepsilon(x)$$

$$\frac{1}{1-x}=1+x+x^2+...+x^n+x^n\varepsilon(x)$$

$$\frac{1}{1+x}=1-x+x^2+...+(-1)^n x^n+x^n\varepsilon(x)$$

$$\sqrt{1+x}=1+\frac{1}{2}x-\frac{1}{2.4}x^2+\frac{1.3}{2.4.6}x^3+...+(-1)^{n+1}\frac{1.3...(2n-3)}{2.4...(2n)}x^n+x^n\varepsilon(x)$$

$$\ln(1+x)=x-\frac{x^2}{2}+...+(-1)^{n+1}\frac{x^n}{n}+x^n\varepsilon(x)$$

$$e^x=1+x+\frac{x^2}{2!}+...+\frac{x^n}{n!}+x^n\varepsilon(x)$$

$$\sin x=x-\frac{x^3}{3!}+\frac{x^5}{5!}+...+(-1)^n\frac{x^{2n+1}}{(2n+1)!}+\begin{cases}x^{2n+1}\varepsilon(x)\\x^{2n+2}\varepsilon_1(x)\end{cases}$$

$$\cos x=1-\frac{x^2}{2!}+\frac{x^4}{4!}+...+(-1)^n\frac{x^{2n}}{(2n)!}+\begin{cases}x^{2n}\varepsilon(x)\\x^{2n+1}\varepsilon_1(x)\end{cases}$$

$$\tan x=x+\frac{1}{3}x^3+\frac{2}{15}x^5+\frac{17}{315}x^7+x^7\varepsilon(x)$$

$$shx=x+\frac{x^3}{3!}+\frac{x^5}{5!}+...+\frac{x^{2n+1}}{(2n+1)!}+x^{2n+1}\varepsilon(x)$$

$$\lim_{x\to 0}\varepsilon(x)=0$$

$$chx=1+\frac{x^2}{2!}+\frac{x^4}{4!}+...+\frac{x^{2n}}{(2n)!}+x^{2n}\varepsilon(x)$$

$$thx=x-\frac{1}{3}x^3+\frac{2}{15}x^5-\frac{17}{315}x^7+x^7\varepsilon(x)$$

$$Arc\sin x=x+\frac{1}{2}\frac{x^3}{3}+...+\frac{1.3...(2n-1)}{2.4...(2n)}\frac{x^{2n+1}}{2n+1}+x^{2n+1}\varepsilon(x)$$

$$Argshx=x-\frac{1}{2}\frac{x^3}{3}+...+(-1)^n\frac{1.3...(2n-1)}{2.4...(2n)}\frac{x^{2n+1}}{2n+1}+x^{2n+1}\varepsilon(x)$$

$$Arc\tan x=x-\frac{x^3}{3}+\frac{x^5}{5}+...+(-1)^n\frac{x^{2n+1}}{(2n+1)!}+x^{2n+1}\varepsilon(x)$$

$$Argthx=x+\frac{x^3}{3}+\frac{x^5}{5}+...+\frac{x^{2n+1}}{(2n+1)!}+x^{2n+1}\varepsilon(x)$$