PRIMITIVES USUELLES

MP 20-21

A connaître par coeur ou à savoir retrouver rapidement

- Etant donné un réel α différent de -1, $\displaystyle\int x^{\alpha}\,dx = \frac{x^{\alpha+1}}{\alpha+1} + c^{te}$ et $\displaystyle\int \frac{dx}{x} = \ln|x| + c^{te}$
- Etant donné un nombre complexe non nul α, $\displaystyle\int e^{\alpha x}\,dx = \frac{e^{\alpha x}}{\alpha} + c^{te}$
- $\displaystyle\int \sin(x)\,dx = -\cos(x) + c^{te}$ $\qquad$ $\displaystyle\int \cos(x)\,dx = \sin(x) + c^{te}$
- $\displaystyle\int \tan(x)\,dx = -\ln|\cos(x)| + c^{te}$ $\qquad$ $\displaystyle\int \mathrm{cotan}(x)\,dx = \ln|\sin(x)| + c^{te}$
- $\displaystyle\int \frac{dx}{\sin^2(x)} = -\mathrm{cotan}(x) + c^{te}$ $\qquad$ $\displaystyle\int \frac{dx}{\cos^2(x)} = \tan(x) + c^{te}$
- $\displaystyle\int \frac{dx}{\sin(x)} = \frac{1}{2}\ln\left|\frac{1-\cos(x)}{1+\cos(x)}\right| + c^{te} = \ln\left|\tan\left(\frac{x}{2}\right)\right| + c^{te}$

  $\displaystyle\int \frac{dx}{\cos(x)} = \frac{1}{2}\ln\left|\frac{1+\sin(x)}{1-\sin(x)}\right| + c^{te} = \ln\left|\tan\left(\frac{\pi}{4}+\frac{x}{2}\right)\right| + c^{te}$
- $\displaystyle\int \mathrm{sh}(x)\,dx = \mathrm{ch}(x) + c^{te}$ $\qquad$ $\displaystyle\int \mathrm{ch}(x)\,dx = \mathrm{sh}(x) + c^{te}$
- $\displaystyle\int \mathrm{th}(x)\,dx = \ln(\mathrm{ch}(x)) + c^{te}$ $\qquad$ $\displaystyle\int \mathrm{coth}(x)\,dx = \ln|\mathrm{sh}(x)| + c^{te}$
- $\displaystyle\int \frac{dx}{\mathrm{sh}^2(x)} = -\mathrm{coth}(x) + c^{te}$ $\qquad$ $\displaystyle\int \frac{dx}{\mathrm{ch}^2(x)} = \mathrm{th}(x) + c^{te}$
- Etant donné un réel a non nul, $\displaystyle\int \frac{dx}{x^2+a^2} = \frac{1}{a}\arctan\left(\frac{x}{a}\right) + c^{te}$
- Etant donné un réel a non nul, $\displaystyle\int \frac{dx}{x^2-a^2} = \frac{1}{2\,a}\ln\left|\frac{x-a}{x+a}\right| + c^{te}$
- Etant donné un réel a non nul, $\displaystyle\int \frac{dx}{\sqrt{a^2-x^2}} = \arcsin\left(\frac{x}{|a|}\right) + c^{te}$
- Etant donné un réel k non nul, $\displaystyle\int \frac{dx}{\sqrt{x^2+k}} = \ln\left|x+\sqrt{x^2+k}\right| + c^{te}$