# Primitives

## CRM 30 :

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TE fontrigo: 03/09/2025

TE primitives: 24/09/2025

$\boxed{\text{Primitive}}$

dérivée

$$x^2 \underset{\text{primitive}}{\overset{(\ )'}{\rightleftarrows}} 2x$$

$$3x^3 \overset{(\ )'}{\rightleftarrows} 3 \cdot 3x^2 = 9x^2$$

$$\sin x \overset{(\ )'}{\rightleftarrows} \cos x$$

$$\frac{x+1}{x-1} \overset{(\ )'}{\rightleftarrows} \frac{(x+1)'(x-1) - (x+1)(x-1)'}{(x-1)^2}$$

développer

$$(x+2)^2 = x^2 + 4x + 4$$

factoriser

$$\int 2x \, dx = x^2$$

On cherche : une fonction $F$ t.q. $F' = 2x$

$$2x = (x^2)'$$

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$$\int \cos x \, dx = \sin x \quad \text{car} \quad (\sin x)' = \cos x$$

$$\boxed{F = m \cdot a}$$

Application

accélération

$$m \cdot g = m \cdot a$$

$$a = g$$

$$g \cong 10$$

$$v' = a$$

$$v = \int a \, dt$$

$$= \int 10 \, dt$$

$$= 10t$$

$$(t^2)' = 2t$$

$$10t$$

$$2 \cdot 5t$$

$$5 \cdot (2t) = 5 \cdot (t^2)'$$

$$x = \int v \, dt = 5t^2$$

$$\int x^2\,dx = \frac{1}{3}x^3 + \text{nimp.}$$

$$(x^3)' = 3x^2$$

$$\left(\frac{1}{3}x^3\right)' = \frac{1}{3}\cdot(x^3)'$$
$$= \frac{1}{3}\cdot 3\cdot x^2$$
$$= \frac{1}{\cancel{3}}\cdot\frac{\cancel{3}}{1}\cdot x^2$$

$$(x^n)' = n\cdot x^{n-1}$$

« augmenter » la puissance

$$\left(\frac{1}{3}x^3 + 5\right)' = \left(\frac{1}{3}x^3\right)' + \underbrace{(5)'}_{0}$$

$$= \frac{1}{3}3x^2 = x^2$$

3 qui sort

rien

$$\frac{1}{3}(x^3)' = \cancel{3}x^2$$

$$\frac{1}{3}3\cdot x^2 = \left(\frac{1}{3}\cdot 3\right)\cdot x^2 = 1\cdot x^2$$

$$\frac{1}{3}\cdot 3 = 1$$

$$\int x^3\,dx = \frac{1}{4}x^4 + C$$

constant

$$\int x\,dx = \frac{1}{2}x^2 + C$$

$$\int 1\,dx = x + C$$

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$$\int 1\,dx = \frac{1}{1}\cdot x + C$$

$$\int x\,dx = \frac{1}{2}x^2 + C$$

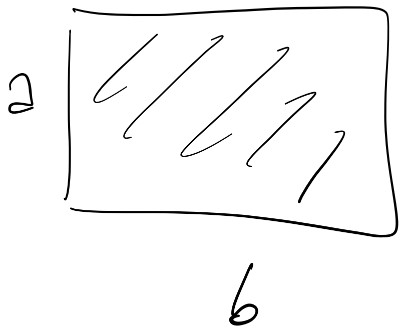
$$\int x^2\,dx = \frac{1}{3}x^3 + C$$

$$\int x^3\,dx = \frac{1}{4}x^4 + C$$

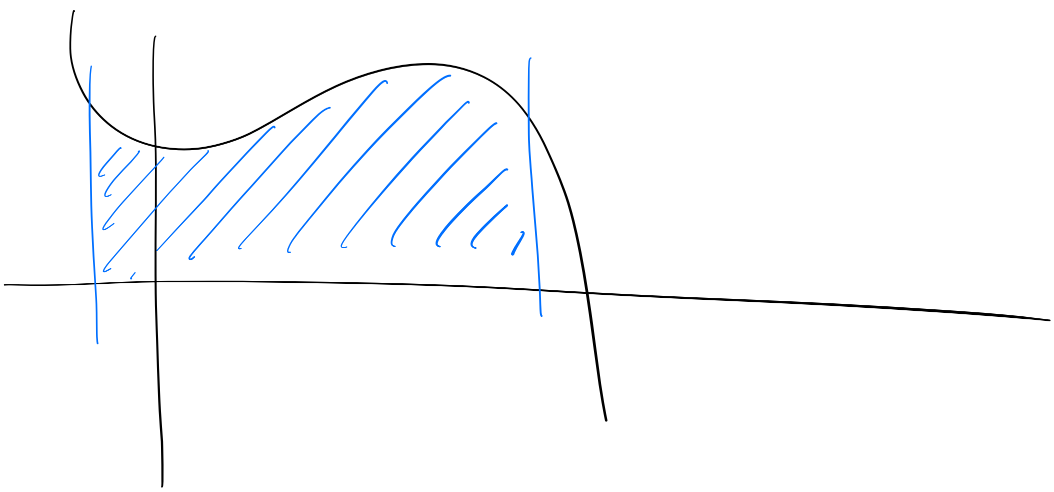
$$\sqrt[m]{x^n} = x^{\frac{n}{m}}$$

$$\int x^{\frac{n}{m}}\,dx = \frac{1}{\frac{n}{m}+1} \cdot x^{\left(\frac{n}{m}+1\right)} + C$$

$$\int x^{k}\,dx = \frac{1}{k+1} \cdot x^{(k+1)} + C$$




$A = a \cdot b$



$$\sqrt{x} = x^{\frac{1}{2}}$$

$$\frac{1}{2} + \frac{1}{1} = \frac{1}{2} + \frac{2}{2} = \frac{3}{2}$$

$$\sqrt[m]{x^n} = x^{\frac{n}{m}}$$

$$\int \sqrt{x}\, dx = \int x^{\frac{1}{2}}\, dx = \boxed{?}\, x^{\frac{1}{2}+1}$$

$$= \frac{1}{\frac{3}{2}}\, x^{\frac{3}{2}}$$