هذه قائمة بتكاملات الدوال النسبية:

$$\int (ax+b)^n dx = \frac{(ax+b)^{n+1}}{a(n+1)} \qquad (\text{for } n \neq -1)$$

$$\int \frac{c}{ax+b} dx = \frac{c}{a} \ln|ax+b|$$

$$\int x(ax+b)^n d = \frac{a(n+1)x-b}{a^2(n+1)(n+2)}(ax+b)^{n+1} \qquad (\text{for } n \notin \{-$$

$$\int \frac{x}{ax+b} dx = \frac{x}{a} - \frac{b}{a^2} \ln|ax+b|$$

$$\int \frac{x}{(ax+b)^2} d = \frac{b}{a^2(ax+b)} + \frac{1}{a^2} \ln|ax+b|$$

$$\int \frac{x}{(ax+b)^n} d = \frac{a(1-n)x-b}{a^2(n-1)(n-2)(ax+b)^{n-1}} \qquad (\text{for } n \notin \{1$$

$$\int \frac{x^2}{ax+b} d = \frac{1}{a^3}\left(\frac{(ax+b)^2}{2} - 2b(ax+b) + b^2 \ln|ax+b|\right)$$

$$\int \frac{x^2}{(ax+b} = \frac{1}{a^3}\left(ax+b-2b\ln|ax+b| - \frac{b^2}{ax+b}\right)$$

$$\int \frac{x^2}{(ax+b} = \frac{1}{a^3}\left(\ln|ax+b| + \frac{2b}{ax+b} - \frac{b^2}{2(ax+b)^2}\right)$$

$$\int \frac{x^2}{(ax+b} = \frac{1}{a^3}\left(-\frac{(ax+b)^{3-n}}{(n-3)} + \frac{2b(a+b)^{2-n}}{(n-2)} - \frac{b^2(ax+b)^1}{(n-1)}\right.$$

$$\int \frac{1}{x(ax+b)} dx = -\frac{1}{b} \ln\left|\frac{ax+b}{x}\right|$$

$$\int \frac{1}{x^2(ax+b)} d = -\frac{1}{bx} + \frac{a}{b^2} \ln\left|\frac{ax+b}{x}\right|$$

$$\int \frac{1}{x^2(ax+b)^2} = -a\left(\frac{1}{b^2(ax+b)} + \frac{1}{ab^2x} - \frac{2}{b^3} \ln\left|\frac{ax+b}{x}\right|\right)$$

$$\int \frac{1}{x^2+a^2} dx = \frac{1}{a} \arctan\frac{x}{a}$$

$$\int \frac{1}{x^2 - a^2} dx =$$

- $-\frac{1}{a} \operatorname{arctanh} \frac{x}{a} = \frac{1}{2a} \ln \frac{a-x}{a+x} \qquad (\text{for } |x|$
- $-\frac{1}{a} \operatorname{arccoth} \frac{x}{a} = \frac{1}{2a} \ln \frac{x-a}{x+a} \qquad (\text{for } |x|$

for $a \neq 0$:

$$\int \frac{1}{ax^2 + b}$$

- $\frac{2}{\sqrt{4ac-b^2}} \arctan \frac{2ax+b}{\sqrt{4ac-b^2}} \qquad (\text{for } 4ac - b$
- $-\frac{2}{\sqrt{b^2-4ac}} \operatorname{arctanh} \frac{2ax+b}{\sqrt{b^2-4ac}} = \frac{1}{\sqrt{b^2-4a}}$
- $-\frac{2}{2ax+b} \qquad (\text{for } 4ac - b^2 = 0)$

$$\int \frac{x}{ax^2 + b} = \frac{1}{2a} \ln \left| ax^2 + bx + c \right| - \frac{b}{2a} \int \frac{dx}{ax^2+bx+c}$$

$$\int \frac{mx+n}{ax^2+bx+}$$

- $\frac{m}{2a} \ln \left| ax^2+bx+c \right| + \frac{2an-bm}{a\sqrt{4ac-b^2}} \arctan \frac{2ax+b}{\sqrt{4ac-b}}$
- $\frac{m}{2a} \ln \left| ax^2+bx+c \right| - \frac{2an-bm}{a\sqrt{b^2-4ac}} \operatorname{arctanh} \frac{2ax+}{\sqrt{b^2-4}}$
- $\frac{m}{2a} \ln \left| ax^2+bx+c \right| - \frac{2an-bm}{a(2ax+b)} \qquad (\text{for } 4ac$

$$\int \frac{1}{(ax^2+bx+c)^n} dx = \frac{2ax+b}{(n-1)(4ac-b^2)(ax^2+bx+c)^{n-1}} + \frac{(2n-3)2a}{(n-1)(4ac-b^2)} \int \frac{1}{(ax^2+bx+c)^{n-1}} dx$$

$$\int \frac{x}{(ax^2+bx+c)^n} dx = \frac{bx+2c}{(n-1)(4ac-b^2)(ax^2+bx+c)^{n-1}} - \frac{b(2n-3)}{(n-1)(4ac-b^2)} \int \frac{1}{(ax^2+bx+c)^{n-1}} dx$$

$$\int \frac{1}{x(ax^2+bx+c)} dx = \frac{1}{2c} \ln \left| \frac{x^2}{ax^2+bx+c} \right| - \frac{b}{2c} \int \frac{1}{ax^2+bx+c} dx$$

$$\int \frac{dx}{x^{2^n}+1} = \sum_{k=1}^{2^{n-1}} \left\{ \frac{1}{2^{n-1}} \left[\sin\left(\frac{(2k-1)\pi}{2^n}\right) \arctan\left[\left(x - \cos\left(\frac{(2k-1)\pi}{2^n}\right) \right) \csc\left(\frac{(2k-1)\pi}{2^n}\right) \right] \right] - \frac{1}{2^n} \left[\cos\left(\frac{(2k-1)\pi}{2^n}\right) \ln \left| x^2 - 2x\cos\left(\frac{(2k-1)\pi}{2^n}\right) + 1 \right| \right] \right\}$$