$$\int f'(x)\ [f(x)]^{n}\ dx = \frac{[f(x)]^{n+1}}{n+1} + C$$

$$\int f'(x)[f(x)]^{\frac{1}{n}}\ dx = \int f'(x)\sqrt[n]{f(x)}\ dx = \frac{[f(x)]^{\frac{1}{n}+1}}{\frac{1}{n}+1} + C$$

$$\int \frac{f'(x)}{f(x)}\ dx = \ln|\ f(x)\ | + C$$

$$\int \frac{f'(x)}{f(x)\cdot \ln a}\ dx = \log_a |\ f(x)\ | + C; \quad a > 0, a \neq 1$$

$$\int e^{f(x)} \cdot f'(x)\ dx = e^{f(x)} + C$$

$$\int a^{f(x)} \cdot f'(x) \cdot \ln a\ dx = a^{f(x)} + C \quad a > 0,\ a \neq 1$$

$$\int \cos[f(x)] \cdot f'(x)\ dx = \operatorname{sen}[f(x)] + C$$

$$\int \operatorname{sen}[f(x)] \cdot f'(x)\ dx = -\cos[f(x)] + C$$

$$\int \operatorname{tg}[f(x)] \cdot f'(x)\ dx = -\ln[\cos f(x)] + C$$

$$\int \operatorname{cotg}[f(x)] \cdot f'(x)\ dx = \ln[\operatorname{sen} f(x)] + C$$

$$\int \operatorname{ch}[f(x)] \cdot f'(x)\ dx = \operatorname{sh}[f(x)] + C$$

$$\int \operatorname{sh}[f(x)] \cdot f'(x)\ dx = \operatorname{ch}[f(x)] + C$$

$$\int \operatorname{th}[f(x)] \cdot f'(x)\ dx = \ln[\operatorname{ch} f(x)] + C$$

$$\int \operatorname{coth}[f(x)] \cdot f'(x)\ dx = \ln[\operatorname{sh} f(x)] + C$$

$$\int \frac{f'(x)}{\cos^2[f(x)]}\ dx = \operatorname{tg}[f(x)] + C$$

$$\int \frac{f'(x)}{\operatorname{sen}^2[f(x)]}\ dx = -\operatorname{cotg}[f(x)] + C$$

$$\int \frac{f'(x)}{ch^2[f(x)]}\,dx = th[f(x)] + C$$

$$\int \frac{f'(x)}{sh^2[f(x)]}\,dx = -coth[f(x)] + C$$

$$\int \frac{f'(x)}{1+f^2(x)}\,dx = arctg[f(x)] + C$$

$$\int \frac{f'(x)}{1-f^2(x)}\,dx = arg\,th[f(x)] + C$$

$$\int \frac{f'(x)}{\sqrt{1-f^2(x)}}\,dx = arc\,sen[f(x)] + C$$

$$\int \frac{f'(x)}{\sqrt{1+f^2(x)}}\,dx = arg\,sh[f(x)] + C$$

$$\int \frac{f'(x)}{\sqrt{f^2(x)-1}}\,dx = arg\,ch[f(x)] + C$$

- **Ejemplos:**

$$\int \frac{1}{\sqrt{1+4x^2}}\,dx = \int \frac{1}{\sqrt{1+(2x)^2}}\,dx = \frac{1}{2}\cdot\int \frac{2}{\sqrt{1+(2x)^2}}\,dx = \frac{1}{2}\cdot arg\,sh(2x) + C$$

$$\int \frac{1}{3+4x^2}\,dx = \int \frac{1}{3\cdot\left(1+\frac{4x^2}{3}\right)}\,dx = \frac{1}{3}\cdot\int \frac{1}{1+\frac{4x^2}{3}}\,dx = \frac{1}{3}\cdot\int \frac{1}{1+\left(\frac{2x}{\sqrt{3}}\right)^2}\,dx = \frac{1}{3}\cdot\frac{1}{\frac{2}{\sqrt{3}}}\int \frac{\frac{2}{\sqrt{3}}}{1+\left(\frac{2x}{\sqrt{3}}\right)^2}\,dx =$$

$$= \frac{1}{2\cdot\sqrt{3}}\cdot\int \frac{\frac{2}{\sqrt{3}}}{1+\left(\frac{2x}{\sqrt{3}}\right)^2}\,dx = \frac{1}{2\cdot\sqrt{3}}\cdot arctg\left(\frac{2x}{\sqrt{3}}\right) + C$$

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

Integrales racionales básicas:

- $$\int \frac{1}{a^2+x^2}\,dx = \int \frac{1}{a^2\cdot\left(1+\frac{x^2}{a^2}\right)}\,dx = \frac{1}{a^2}\cdot\int \frac{1}{1+\left(\frac{x}{a}\right)^2}\,dx = \frac{1}{a^2}\cdot a\cdot\int \frac{\frac{1}{a}}{1+\left(\frac{x}{a}\right)^2}\,dx = \frac{1}{a}\,\mathrm{arc\,tg}\left(\frac{x}{a}\right)$$

- $$\int \frac{1}{a^2-x^2}\,dx = \int \frac{1}{a^2\cdot\left(1-\frac{x^2}{a^2}\right)}\,dx = \frac{1}{a^2}\cdot\int \frac{1}{1-\left(\frac{x}{a}\right)^2}\,dx = \frac{1}{a^2}\cdot a\cdot\int \frac{\frac{1}{a}}{1-\left(\frac{x}{a}\right)^2}\,dx = \frac{1}{a}\,\mathrm{arg\,th}\left(\frac{x}{a}\right)$$

- $$\int \frac{1}{a^2+(bx)^2}\,dx = \int \frac{1}{a^2\cdot\left(1+\frac{(bx)^2}{a^2}\right)}\,dx = \frac{1}{a^2}\cdot\int \frac{1}{1+\left(\frac{bx}{a}\right)^2}\,dx = \frac{1}{a^2}\cdot\frac{a}{b}\cdot\int \frac{\frac{b}{a}}{1+\left(\frac{bx}{a}\right)^2}\,dx = \frac{1}{ab}\,\mathrm{arc\,tg}\left(\frac{bx}{a}\right)$$

- $$\int \frac{1}{a^2-(bx)^2}\,dx = \int \frac{1}{a^2\cdot\left(1-\frac{(bx)^2}{a^2}\right)}\,dx = \frac{1}{a^2}\cdot\int \frac{1}{1-\left(\frac{bx}{a}\right)^2}\,dx = \frac{1}{a^2}\cdot\frac{a}{b}\cdot\int \frac{\frac{b}{a}}{1-\left(\frac{bx}{a}\right)^2}\,dx = \frac{1}{ab}\,\mathrm{arg\,th}\left(\frac{bx}{a}\right)$$

- $$\int \frac{1}{a^2+(bx+c)^2}\,dx = \int \frac{1}{a^2\cdot\left(1+\frac{(bx+c)^2}{a^2}\right)}\,dx = \frac{1}{a^2}\cdot\int \frac{1}{1+\left(\frac{bx+c}{a}\right)^2}\,dx = \frac{1}{a^2}\cdot\frac{a}{b}\cdot\int \frac{\frac{b}{a}}{1+\left(\frac{bx+c}{a}\right)^2}\,dx =$$

$$= \frac{1}{ab}\,\mathrm{arc\,tg}\left(\frac{bx+c}{a}\right)$$

- $$\int \frac{1}{a^2-(bx+c)^2}\,dx = \ldots = \frac{1}{ab}\,\mathrm{arg\,th}\left(\frac{bx+c}{a}\right)$$

Integrales irracionales básicas:

$$(a>0);\ \int \frac{1}{\sqrt{a^2-x^2}}\,dx = \int \frac{1}{\sqrt{a^2\left(1-\frac{x^2}{a^2}\right)}}\,dx = \frac{1}{a}\cdot\int \frac{1}{\sqrt{1-\left(\frac{x}{a}\right)^2}}\,dx = \frac{1}{a}\cdot a\cdot\int \frac{\frac{1}{a}}{\sqrt{1-\left(\frac{x}{a}\right)^2}}\,dx = \mathrm{arc\,sen}\left(\frac{x}{a}\right)$$

$$\int \frac{1}{\sqrt{a^2+x^2}}\,dx = \ldots = \mathrm{arg\,sh}\left(\frac{x}{a}\right)$$

$$\int \frac{1}{\sqrt{x^2-a^2}}\,dx = \ldots = \mathrm{arg\,ch}\left(\frac{x}{a}\right)$$

$$\int \frac{1}{\sqrt{a^2-(bx)^2}}\,dx = \ldots = \frac{1}{b}\,\text{arc sen}\left(\frac{bx}{a}\right)$$

$$\int \frac{1}{\sqrt{a^2+(bx)^2}}\,dx = \ldots = \frac{1}{b}\,\text{arg sh}\left(\frac{bx}{a}\right)$$

$$\int \frac{1}{\sqrt{(bx)^2-a^2}}\,dx = \ldots = \frac{1}{b}\,\text{arg ch}\left(\frac{bx}{a}\right)$$

$$\int \frac{1}{\sqrt{a^2-(bx+c)^2}}\,dx = \ldots = \frac{1}{b}\,\text{arc sen}\left(\frac{bx+c}{a}\right)$$

$$\int \frac{1}{\sqrt{a^2+(bx+c)^2}}\,dx = \ldots = \frac{1}{b}\,\text{arg sh}\left(\frac{bx+c}{a}\right)$$

$$\int \frac{1}{\sqrt{(bx+c)^2-a^2}}\,dx = \ldots = \frac{1}{b}\,\text{arg ch}\left(\frac{bx+c}{a}\right)$$