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

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

$$u = Lnx \Rightarrow du = {}^{1}\!/_{x}\,dx$$
$$dv = {}^{1}\!/_{x^2}\,dx \Rightarrow v = -{}^{1}\!/_{x}$$

$$\int \frac{x^2}{1+x^6}\,dx = \int \frac{x^2}{1+\left(x^3\right)^2}\,dx = \frac{1}{3}\,\text{arctg}\,x^3 + C$$

$$\int \frac{1}{xLnx}\,dx = Ln(Lnx)$$

$$Lnx = t \Rightarrow {}^{1}\!/_{x}\,dx = dt$$

MEJOR USAR: $\int \frac{f'}{f} = Lnf$ *reescribiendo* $\int \frac{1}{xLnx}\,dx = \int \frac{{}^{1}\!/_{x}}{Lnx}\,dx = Ln(Lnx)$

$$\int (\cos 2x - \text{sen}\,3x)dx = \frac{\text{sen}\,2x}{2} + \frac{\cos 3x}{3} + C$$

$$\int x\sqrt[4]{1-x^2}\,dx = \int x\left(1-x^2\right)^{\frac{1}{4}}dx = -\frac{1}{2}\frac{\left(1-x^2\right)^{\frac{1}{4}+1}}{\frac{1}{4}+1} = -\frac{2}{5}\left(1-x^2\right)\sqrt[4]{\left(1-x^2\right)} + C$$

USAR: $\int f^n f' = \frac{f^{n+1}}{n+1}$

$$\int \frac{\operatorname{sen} x}{1+\cos^2 x}\ dx = -\operatorname{arctg}(\cos x) + C$$

$$USAR: \int \frac{f'}{1+f^2} = \operatorname{arctg} f$$

$$\int \frac{x+1}{\sqrt{x-1}}\ dx = \int \frac{t^2+2}{t} 2t dt = 2\left[\frac{t^3}{3} + 2t\right] = \frac{2}{3}(x-1)\sqrt{x-1} + 4\sqrt{x-1} + C$$

$$t = \sqrt{x-1} \Rightarrow dt = \frac{dx}{2\sqrt{x-1}}$$

$$x-1 = t^2 \Rightarrow x = t^2 + 1 \Rightarrow dx = 2t dt$$

$$\mathrm{I} = \int \operatorname{sen}^2 x\ dx = -\operatorname{sen} x \cos x + \int \cos^2 x\ dx = -\operatorname{sen} x \cos x + \int (1 - \operatorname{sen}^2 x)\ dx = -\operatorname{sen} x \cos x + \int dx\ -\mathrm{I} \Rightarrow$$

$$\Rightarrow 2\mathrm{I} = -\operatorname{sen} x \cos x + x \Rightarrow \int \operatorname{sen}^2 x\ dx = \frac{1}{2}(x - \operatorname{sen} x \cos x) + C$$

$$u = \operatorname{sen} x \Rightarrow du = \cos x dx$$

$$dv = \operatorname{sen} x dx \Rightarrow v = -\cos x$$

$$\int \frac{\cos\sqrt{x}}{\sqrt{x}}\ dx = 2 \operatorname{sen}\sqrt{x} + C$$

$$USAR: \int \cos f . f' = \operatorname{sen} f$$

$$\int \frac{1-\cos x}{1+\cos x}\ dx = \int \frac{1-\cos x}{1+\cos x} . \frac{1-\cos x}{1-\cos x} dx = \int \frac{1 - 2\cos x + \cos^2 x}{\operatorname{sen}^2 x} dx = -\cot gx + \frac{2}{\operatorname{sen} x} - \cot gx - x + C$$

$$\int \frac{1}{\operatorname{sen}^2 x} dx = -\cot gx$$

$$\int \frac{\cos x}{\operatorname{sen}^2 x} dx = \int \cos x . \operatorname{sen}^{-2} x dx = \frac{\operatorname{sen}^{-2+1} x}{-2+1}$$

$$\int \cot g^2 x dx = \int (\cot g^2 x + 1 - 1) dx = -\cot gx - x$$

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

$$USAR: \int f^n f' = \frac{f^{n+1}}{n+1}$$

$$\int \frac{dx}{1+9x^2} = \frac{1}{3}\operatorname{arctg}(3x) + C$$

$$USAR: \int \frac{f'}{1+f^2} = \operatorname{arctg} f$$

$$\int \frac{x^4}{1-x}\, dx = \int -\left(x^3+x^2+x+1\right)dx - \int \frac{1}{1-x}dx = -\left(\frac{x^4}{4}+\frac{x^3}{3}+\frac{x^2}{2}+x\right) + Ln|1-x| + C$$

$$\int \frac{\operatorname{sen}^3 x}{\cos x}\, dx = \int \frac{\operatorname{sen} x\left(1-\cos^2 x\right)}{\cos x}dx = \int \frac{\operatorname{sen} x}{\cos x}dx - \int \operatorname{sen} x \cos x dx = -Ln|\cos x| - \frac{\operatorname{sen}^2 x}{2} + C$$

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

$$USAR: \int e^f f' = e^f$$

$$\int \frac{Ln(Lnx)}{x}\, dx = \int Ln\, t\, dt = tLn\, t - \int dt = tLnt - t = Lnx(Ln(Lnx)) - Lnx + C$$

$$Lnx = t \Rightarrow {}^{1}\!/\!_{x}\, dx = dt \qquad u = Lnt \Rightarrow du = {}^{1}\!/\!_{t}\, dt$$

$$dv = dt \Rightarrow v = t$$

$$\int \frac{\cos(Lnx)}{x}\, dx = \text{sen}(Lnx) + C$$

$$USAR: \int \cos f . f' = \text{sen } f$$

$$\int \text{sen } e^{2x} . e^{2x} dx = -\frac{1}{2} \cos e^{2x} + C$$

$$USAR: \int \text{sen } f . f' = -\cos f$$

$$\int \frac{4x^3 - 6x^2 + x - 3}{2x^4 - 4x^3 + x^2 - 6x - 1} dx = \frac{1}{2} Ln\left|2x^4 - 4x^3 + x^2 - 6x - 1\right| + C$$

$$USAR: \int \frac{f'}{f} = Ln|f|$$