Tabla de Integrales

Formas Básicas

$$\int c\,f(x)\,dx = c\int f(x)\,dx \tag{1}$$

$$\int a\,f(x)+b\,g(x)\,dx = a\int f(x)\,dx + b\int g(x)\,dx \tag{2}$$

$$\int ax^n\,dx = \frac{a}{n+1}x^{n+1},\ n\neq -1 \tag{3}$$

$$\int af(x)^n\cdot f'(x)\,dx = \frac{f(x)^{n+1}}{n+1},\ n\neq -1 \tag{4}$$

$$\int \frac{a}{x}\,dx = a\ln x \tag{5}$$

$$\int \frac{1}{ax+b}\,dx = \frac{1}{a}\ln|ax+b| \tag{6}$$

$$\int \frac{f'(x)}{f(x)}\,dx = \ln|f(x)| \tag{7}$$

$$\int b^{ax}\,dx = \frac{b^{ax}}{a\ln b} \tag{8}$$

$$\int u\,dv = uv - \int v\,du = u\int dv - \int v\,du \tag{9}$$

Integrales de Funciones Racionales

$$\int \frac{1}{(x+a)^2}\,dx = -\frac{1}{x+a} \tag{10}$$

$$\int (x+a)^n\,dx = \frac{(x+a)^{n+1}}{n+1},\ n\neq -1 \tag{11}$$

$$\int x(x+a)^n\,dx = \frac{(x+a)^{n+1}((n+1)x-a)}{(n+1)(n+2)} \tag{12}$$

$$\int \frac{1}{1+x^2}\,dx = \arctan x \tag{13}$$

$$\int \frac{1}{a+bx^2}\,dx = \frac{1}{\sqrt{ab}}\arctan\left(x\sqrt{\frac{b}{a}}\right) \tag{14}$$

$$\int \frac{x}{a+bx^2}\,dx = \frac{1}{2b}\ln|a+bx^2| \tag{15}$$

$$\int \frac{x^2}{a+bx^2}\,dx = \frac{x}{b} - \frac{\sqrt{a}\arctan\left(\frac{\sqrt{b}x}{\sqrt{a}}\right)}{b^{3/2}} \tag{16}$$

$$\int \frac{x^3}{a+bx^2}\,dx = \frac{x^2}{2b} - \frac{a}{2b^2}\ln|a+bx^2| \tag{17}$$

$$\int \frac{x}{(x+a)^2}\,dx = \frac{a}{a+x} + \ln|a+x| \tag{18}$$

$$\int \frac{1}{(x+a)(x+b)}\,dx = \frac{1}{b-a}\ln\frac{a+x}{b+x},\ a\neq b \tag{19}$$

$$\int \frac{1}{ax^2+bx+c}\,dx = \frac{2}{\sqrt{4ac-b^2}}\arctan\frac{2ax+b}{\sqrt{4ac-b^2}} \tag{20}$$

$$\int \frac{x}{ax^2+bx+c}\,dx = \frac{1}{2a}\ln|ax^2+bx+c| - \frac{b}{a\sqrt{4ac-b^2}}\arctan\frac{2ax+b}{\sqrt{4ac-b^2}} \tag{21}$$

$$\int \frac{dx}{(ax^2+bx+c)^n} = \frac{2ax+b}{(n-1)(4ac-b^2)(ax^2+bx+c)^{n-1}} + \frac{(2n-3)2a}{(n-1)(4ac-b^2)}\int \frac{dx}{(ax^2+bx+c)^{n-1}} \tag{22}$$

$$\int \frac{x\,dx}{(ax^2+bx+c)^n} = \frac{bx+2c}{(n-1)(4ac-b^2)(ax^2+bx+c)^{n-1}} - \frac{b(2n-3)}{(n-1)(4ac-b^2)}\int \frac{dx}{(ax^2+bx+c)^{n-1}} \tag{23}$$

Integrales con Raíces

$$\int \sqrt{ax+b}\,dx = \frac{2}{3a}(ax+b)^{3/2} \tag{24}$$

$$\int \frac{1}{\sqrt{ax+b}}\,dx = \frac{2}{a}\sqrt{ax+b} \tag{25}$$

$$\int \sqrt{ax+b}\,dx = \left(\frac{2b}{3a}+\frac{2x}{3}\right)\sqrt{ax+b} \tag{26}$$

$$\int x\sqrt{ax+b}\,dx = \frac{2\sqrt{ax+b}(3a^2x^2+abx-2b^2)}{15a^2} \tag{27}$$

$$\int (ax+b)^{3/2}\,dx = \frac{2}{5a}(ax+b)^{5/2} \tag{28}$$

$$\int \sin^2 ax\cos^2 bx\,dx = \frac{x}{4} - \frac{\sin 2ax}{8a} - \frac{\sin[2(a-b)x]}{16(a-b)} + \frac{\sin 2bx}{8b} - \frac{\sin[2(a+b)x]}{16(a+b)} \tag{79}$$

$$\int \sin^2 ax\cos^2 ax\,dx = \frac{x}{8} - \frac{\sin 4ax}{32a} \tag{80}$$

$$\int \tan ax\,dx = -\frac{1}{a}\ln\cos ax \tag{81}$$

$$\int \tan^2 ax\,dx = -x + \frac{1}{a}\tan ax \tag{82}$$

$$\int \tan^3 ax\,dx = \frac{1}{a}\ln\cos ax + \frac{1}{2a}\sec^2 ax \tag{83}$$

$$\int \tan^n ax\,dx = \frac{1}{a(n-1)}\tan^{n-1} ax - \int \tan^{n-2} ax\,dx,\ n\neq 1 \tag{84}$$

$$\int \sec x\,dx = \ln|\sec x+\tan x| \tag{85}$$

$$\int \sec^2 ax\,dx = \frac{1}{a}\tan ax \tag{86}$$

$$\int \sec^3 x\,\mathrm{dx} = \frac{1}{2}\sec x\tan x + \frac{1}{2}\ln|\sec x+\tan x| \tag{87}$$

$$\int \sec x\tan x\,dx = \sec x \tag{88}$$

$$\int \sec^2 x\tan x\,dx = \frac{1}{2}\sec^2 x \tag{89}$$

$$\int \sec^n x\tan x\,dx = \frac{1}{n}\sec^n x,\ n\neq 0 \tag{90}$$

$$\int \csc x\,dx = \ln\left|\tan\frac{x}{2}\right| = \ln|\csc x-\cot x| \tag{91}$$

$$\int \csc^2 ax\,dx = -\frac{1}{a}\cot ax \tag{92}$$

$$\int \csc^3 x\,dx = -\frac{1}{2}\cot x\csc x + \frac{1}{2}\ln|\csc x-\cot x| \tag{93}$$

$$\int \csc^n x\cot x\,dx = -\frac{1}{n}\csc^n x,\ n\neq 0 \tag{94}$$

$$\int \sec x\csc x\,dx = \ln|\tan x| \tag{95}$$

Productos de Funciones Trigonométricas y Monomios

$$\int x\cos ax\,dx = \frac{1}{a^2}\cos ax + \frac{x}{a}\sin ax \tag{96}$$

$$\int x^2\cos ax\,dx = \frac{2x\cos ax}{a^2} + \frac{a^2x^2-2}{a^3}\sin ax \tag{97}$$

$$\int x^n\cos ax\,dx = \frac{x^n\sin ax}{a} - \frac{n}{a}\int x^{n-1}\sin ax\,dx \tag{98}$$

$$\int x\sin ax\,dx = -\frac{x\cos ax}{a} + \frac{\sin ax}{a^2} \tag{99}$$

$$\int x^2\sin ax\,dx = \frac{2-a^2x^2}{a^3}\cos ax + \frac{2x\sin ax}{a^2} \tag{100}$$

$$\int x^n\sin ax\,dx = -\frac{x^n}{a}\cos ax + \frac{n}{a}\int x^{n-1}\cos ax\,dx,\ n>0 \tag{101}$$

Productos de Funciones Trigonométricas y Exponencial

$$\int e^x\sin x\,dx = \frac{1}{2}e^x(\sin x-\cos x) \tag{102}$$

$$\int e^{bx}\sin ax\,dx = \frac{1}{a^2+b^2}e^{bx}(b\sin ax - a\cos ax) \tag{103}$$

$$\int e^x\cos x\,dx = \frac{1}{2}e^x(\sin x+\cos x) \tag{104}$$

$$\int e^{bx}\cos ax\,dx = \frac{1}{a^2+b^2}e^{bx}(a\sin ax + b\cos ax) \tag{105}$$

$$\int xe^x\sin x\,dx = \frac{1}{2}e^x(\cos x - x\cos x + x\sin x) \tag{106}$$

$$\int xe^x\cos x\,dx = \frac{1}{2}e^x(x\cos x - \sin x + x\sin x) \tag{107}$$

Integrales con Funciones Trigonométricas Inversas

$$\int \arcsin x\,dx = x\arcsin x + \sqrt{1-x^2} \tag{108}$$

$$\int \arccos x\,dx = x\arccos x - \sqrt{1-x^2} \tag{109}$$

$$\int \arctan x\,dx = x\arctan x - \frac{1}{2}\ln\left|1+x^2\right| \tag{110}$$

$$\int \operatorname{arccot} x\,dx = x\operatorname{arccot} x + \frac{1}{2}\ln\left|1+x^2\right| \tag{111}$$

$$\int \operatorname{arcsec} x\,dx = x\operatorname{arcsec} x - \operatorname{arcosh} x \tag{112}$$

$$\int \operatorname{arccsc} x\,dx = x\operatorname{arccsc} x + \operatorname{arcosh} x \tag{113}$$

$$\int \frac{x}{\sqrt{ax \pm b}}\,dx = \frac{2}{3a^2}(ax \mp 2b)\sqrt{ax \pm b} \tag{29}$$

$$\int \sqrt{\frac{x}{a-x}}\,dx = -\sqrt{x(a-x)} - a\arctan\frac{\sqrt{x(a-x)}}{x-a} \tag{30}$$

$$\int \sqrt{\frac{x}{a+x}}\,dx = \sqrt{x(a+x)} - a\ln\left[\sqrt{x}+\sqrt{x+a}\right] \tag{31}$$

$$\int x\sqrt{ax+b}\,dx = \frac{2}{15a^2}(-2b^2+abx+3a^2x^2)\sqrt{ax+b} \tag{32}$$

$$\int \sqrt{x(ax+b)}\,dx = \frac{1}{4a^{3/2}}\left[(2ax+b)\sqrt{ax(ax+b)} - b^2\ln\left|a\sqrt{x}+\sqrt{a(ax+b)}\right|\right] \tag{33}$$

$$\int \sqrt{x^3(ax+b)}\,dx = \left[\frac{b}{12a} - \frac{b^2}{8a^2x} + \frac{x}{3}\right]\sqrt{x^3(ax+b)} + \frac{b^3}{8a^{5/2}}\ln\left|a\sqrt{x}+\sqrt{a(ax+b)}\right| \tag{34}$$

$$\int \sqrt{x^2 \pm a^2}\,dx = \frac{1}{2}x\sqrt{x^2 \pm a^2} \pm \frac{1}{2}a^2\ln\left|x+\sqrt{x^2 \pm a^2}\right| \tag{35}$$

$$\int \sqrt{a^2-x^2}\,dx = \frac{1}{2}x\sqrt{a^2-x^2} + \frac{1}{2}a^2\arctan\frac{x}{\sqrt{a^2-x^2}} \tag{36}$$

$$\int x\sqrt{x^2 \pm a^2}\,dx = \frac{1}{3}\left(x^2 \pm a^2\right)^{3/2} \tag{37}$$

$$\int \frac{1}{\sqrt{x^2 \pm a^2}}\,dx = \ln\left|x+\sqrt{x^2 \pm a^2}\right| \tag{38}$$

$$\int \frac{1}{\sqrt{a^2-x^2}}\,dx = \arcsin\frac{x}{a} \tag{39}$$

$$\int \frac{x}{\sqrt{x^2 \pm a^2}}\,dx = \sqrt{x^2 \pm a^2} \tag{40}$$

$$\int \frac{x}{\sqrt{a^2-x^2}}\,dx = -\sqrt{a^2-x^2} \tag{41}$$

$$\int \frac{x^2}{\sqrt{x^2 \pm a^2}}\,dx = \frac{1}{2}x\sqrt{x^2 \pm a^2} \mp \frac{1}{2}a^2\ln\left|x+\sqrt{x^2 \pm a^2}\right| \tag{42}$$

$$\int \sqrt{ax^2+bx+c}\,dx = \frac{b+2ax}{4a}\sqrt{ax^2+bx+c} + \frac{4ac-b^2}{8a^{3/2}}\ln\left|2ax+b+2\sqrt{a(ax^2+bx^{+}c)}\right| \tag{43}$$

$$\int x\sqrt{ax^2+bx+c}\,dx = \frac{1}{48a^{5/2}}\left(2\sqrt{a}\sqrt{ax^2+bx+c} - \left(3b^2+2abx+8a(c+ax^2)\right) + 3(b^3-4abc)\ln\left|b+2ax+2\sqrt{a}\sqrt{ax^2+bx+x}\right|\right) \tag{44}$$

$$\int \frac{1}{\sqrt{ax^2+bx+c}}\,dx = \frac{1}{\sqrt{a}}\ln\left|2ax+b+2\sqrt{a(ax^2+bx+c)}\right| \tag{45}$$

$$\int \frac{x}{\sqrt{ax^2+bx+c}}\,dx = \frac{1}{a}\sqrt{ax^2+bx+c} + \frac{b}{2a^{3/2}}\ln\left|2ax+b+2\sqrt{a(ax^2+bx+c)}\right| \tag{46}$$

Integrales con Logaritmos

$$\int \ln ax\,dx = x\ln ax - x \tag{47}$$

$$\int \frac{\ln ax}{x}\,dx = \frac{1}{2}(\ln ax)^2 \tag{48}$$

$$\int \ln(ax+b)\,dx = \left(x+\frac{b}{a}\right)\ln(ax+b) - x,\ a \neq 0 \tag{49}$$

$$\int \ln\left(a^2x^2 \pm b^2\right)\,dx = x\ln\left(a^2x^2 \pm b^2\right) + \frac{2b}{a}\arctan\frac{ax}{b} - 2x \tag{50}$$

$$\int \ln\left(a^2 - b^2x^2\right)\,dx = x\ln\left(ar - b^2x^2\right) + \frac{2a}{b}\arctan\frac{bx}{a} - 2x \tag{51}$$

$$\int \ln\left(ax^2+bx+c\right)\,dx = \frac{1}{a}\sqrt{4ac-b^2}\arctan\frac{2ax+b}{\sqrt{4ac-b^2}} - 2x + \left(\frac{b}{2a}+x\right)\ln\left(ax^2+bx+c\right) \tag{52}$$

$$\int x\ln(ax+b)\,dx = \frac{bx}{2a} - \frac{1}{4}x^2 + \frac{1}{2}\left(x^2 - \frac{b^2}{a^2}\right)\ln(ax+b) \tag{53}$$

$$\int x^m(\ln x)^n\,dx = \frac{x^{m+1}(\ln x)^n}{m+1} - \frac{n}{m+1}\int x^m(\ln x)^{n-1}dx,\ m \neq -1 \tag{54}$$

Integrales con Función Exponencial

$$\int e^{f(x)}\cdot f'(x)\,dx = e^{f(x)} \tag{55}$$

$$\int e^{ax}\,dx = \frac{1}{a}e^{ax} \tag{56}$$

$$\int xe^x\,dx = (x-1)e^x \tag{57}$$

$$\int xe^{ax}\,dx = \left(\frac{x}{a} - \frac{1}{a^2}\right)e^{ax} \tag{58}$$

$$\int x^2e^x\,dx = \left(x^2-2x+2\right)e^x \tag{59}$$

$$\int x^2e^{ax}\,dx = \left(\frac{x^2}{a} - \frac{2x}{a^2} + \frac{2}{a^3}\right)e^{ax} \tag{60}$$

$$\int x^3e^x\,dx = \left(x^3-3x^2+6x-6\right)e^x \tag{61}$$

$$\int x^ne^{ax}\,dx = \frac{x^ne^{ax}}{a} - \frac{n}{a}\int x^{n-1}e^{ax}\,dx \tag{62}$$

$$\int e^{ax}\ln x\,dx = \frac{e^{ax}\ln x}{a} - \frac{1}{a}\int \frac{e^{ax}}{x}\,dx \tag{63}$$

$$\int \frac{1}{a+be^{cx}}\,dx = \frac{x}{a} - \frac{1}{ac}\ln\left(a+be^{cx}\right) \tag{64}$$

$$\int \frac{1}{ae^{mx}+be^{-mx}}\,dx = \frac{1}{m\sqrt{ab}}\arctan\left(e^{mx}\sqrt{\frac{a}{b}}\right) \tag{65}$$

Integrales con Funciones Trigonométricas

$$\int \sin ax\,dx = -\frac{1}{a}\cos ax \tag{66}$$

$$\int \sin^2 ax\,dx = \frac{x}{2} - \frac{\sin 2ax}{4a} \tag{67}$$

$$\int \sin^n ax\,dx = -\frac{\sin^{n-1}ax\cos ax}{an} + \frac{n-1}{n}\int \sin^{n-2}ax\,dx \tag{68}$$

$$\int \cos ax\,dx = \frac{1}{a}\sin ax \tag{69}$$

$$\int \cos^2 ax\,dx = \frac{x}{2} + \frac{\sin 2ax}{4a} \tag{70}$$

$$\int \cos^n ax\,dx = \frac{\cos^{n-1}ax\sin ax}{an} + \frac{n-1}{n}\int \cos^{n-2}ax\,dx,\ n > 0 \tag{71}$$

$$\int \cos ax\sin bx\,dx = \frac{\cos[(a-b)x]}{2(a-b)} - \frac{\cos[(a+b)x]}{2(a+b)},\ |a| \neq |b| \tag{72}$$

$$\int \sin ax\sin bx\,dx = \frac{\sin[(a-b)x]}{2(a-b)} - \frac{\sin[(a+b)x]}{2(a+b)},\ |a| \neq |b| \tag{73}$$

$$\int \cos ax\cos bx\,dx = \frac{\sin[(a-b)x]}{2(a-b)} + \frac{\sin[(a+b)x]}{2(a+b)},\ |a| \neq |b| \tag{74}$$

$$\int \sin^2 ax\cos bx\,dx = -\frac{\sin[(2a-b)x]}{4(2a-b)} + \frac{\sin bx}{2b} - \frac{\sin[(2a+b)x]}{4(2a+b)} \tag{75}$$

$$\int \sin^2 x\cos x\,dx = \frac{1}{3}\sin^3 x \tag{76}$$

$$\int \cos^2 ax\sin bx\,dx = \frac{\cos[(2a-b)x]}{4(2a-b)} - \frac{\cos bx}{2b} - \frac{\cos[(2a+b)x]}{4(2a+b)} \tag{77}$$

$$\int \cos^2 ax\sin ax\,dx = -\frac{1}{3a}\cos^3 ax \tag{78}$$