DERIVADAS E INTEGRALES

Reglas básicas de derivación

1. $\frac{d}{dx}[cu] = cu'$
2. $\frac{d}{dx}[u \pm v] = u' \pm v'$
3. $\frac{d}{dx}[uv] = uv' + vu'$
4. $\frac{d}{dx}\left[\frac{u}{v}\right] = \frac{vu' - uv'}{v^2}$
5. $\frac{d}{dx}[c] = 0$
6. $\frac{d}{dx}[u^n] = nu^{n-1}u'$
7. $\frac{d}{dx}[x] = 1$
8. $\frac{d}{dx}[|u|] = \frac{u}{|u|}(u'),\ u \neq 0$
9. $\frac{d}{dx}[\ln u] = \frac{u'}{u}$
10. $\frac{d}{dx}[e^u] = e^u u'$
11. $\frac{d}{dx}[\operatorname{sen} u] = (\cos u)u'$
12. $\frac{d}{dx}[\cos u] = -(\operatorname{sen} u)u'$
13. $\frac{d}{dx}[\operatorname{tg} u] = (\sec^2 u)u'$
14. $\frac{d}{dx}[\operatorname{ctg} u] = -(\operatorname{cosec} u)^2 u'$
15. $\frac{d}{dx}[\sec u] = (\sec u \operatorname{tg} u)u'$
16. $\frac{d}{dx}[\operatorname{cosec} u] = -(\operatorname{cosec} u \operatorname{ctg} u)u'$
17. $\frac{d}{dx}[\operatorname{arcsen} u] = \frac{u'}{\sqrt{1 - u^2}}$
18. $\frac{d}{dx}[\arccos u] = \frac{-u'}{\sqrt{1 - u^2}}$
19. $\frac{d}{dx}[\operatorname{arctg} u] = \frac{u'}{1 + u^2}$
20. $\frac{d}{dx}[\operatorname{arcctg} u] = \frac{-u'}{1 + u^2}$
21. $\frac{d}{dx}[\operatorname{arcsec} u] = \frac{u'}{|u|\sqrt{u^2 - 1}}$
22. $\frac{d}{dx}[\operatorname{arccosec} u] = \frac{-u'}{|u|\sqrt{u^2 - 1}}$

Fórmulas básicas de integración

1. $\int kf(u)\,du = k\int f(u)\,du$
2. $\int [f(u) \pm g(u)]\,du = \int f(u)\,du \pm \int g(u)\,du$
3. $\int du = u + C$
4. $\int u^n\,du = \frac{u^{n+1}}{n+1} + C,\ n \neq -1$
5. $\int \frac{du}{u} = \ln|u| + C$
6. $\int e^u\,du = e^u + C$
7. $\int \operatorname{sen} u\,du = -\cos u + C$
8. $\int \cos u\,du = \operatorname{sen} u + C$
9. $\int \operatorname{tg} u\,du = -\ln|\cos u| + C$
10. $\int \operatorname{ctg} u\,du = \ln|\operatorname{sen} u| + C$
11. $\int \sec u\,du = \ln|\sec u + \operatorname{tg} u| + C$
12. $\int \operatorname{cosec} u\,du = -\ln|\operatorname{cosec} u + \operatorname{ctg} u| + C$
13. $\int \sec^2 u\,du = \operatorname{tg} u + C$
14. $\int \operatorname{cosec}^2 u\,du = -\operatorname{ctg} u + C$
15. $\int \sec u \operatorname{tg} u\,du = \sec u + C$
16. $\int \operatorname{cosec} u \operatorname{ctg} u\,du = -\operatorname{cosec} u + C$
17. $\int \frac{du}{\sqrt{a^2 - u^2}} = \operatorname{arcsen}\frac{u}{a} + C$
18. $\int \frac{du}{a^2 + u^2} = \frac{1}{a}\operatorname{arctg}\frac{u}{a} + C$
19. $\int \frac{du}{u\sqrt{u^2 - a^2}} = \frac{1}{a}\operatorname{arcsec}\frac{|u|}{a} + C$