DERIVADAS E INTEGRALES

Reglas básicas de derivación

1. $\dfrac{d}{dx}[cu] = cu'$

2. $\dfrac{d}{dx}[u \pm v] = u' \pm v'$

3. $\dfrac{d}{dx}[uv] = uv' + vu'$

4. $\dfrac{d}{dx}\left[\dfrac{u}{v}\right] = \dfrac{vu' - uv'}{v^2}$

5. $\dfrac{d}{dx}[c] = 0$

6. $\dfrac{d}{dx}[u^n] = nu^{n-1}u'$

7. $\dfrac{d}{dx}[x] = 1$

8. $\dfrac{d}{dx}[|u|] = \dfrac{u}{|u|}(u'), \ u \neq 0$

9. $\dfrac{d}{dx}[ln \ u] = \dfrac{u'}{u}$

10. $\dfrac{d}{dx}[e^u] = e^u u'$

11. $\dfrac{d}{dx}[sen \ u] = (\cos u)u'$

12. $\dfrac{d}{dx}[\cos u] = -(sen \ u)u'$

13. $\dfrac{d}{dx}[tg \ u] = (\sec^2 u)u'$

14. $\dfrac{d}{dx}[ctg \ u] = -(cosec \ u)^2 u'$

15. $\dfrac{d}{dx}[\sec u] = (\sec u \ tg \ u)u'$

16. $\dfrac{d}{dx}[cosec \ u] = -(cosec \ u \ ctg \ u)u'$

17. $\dfrac{d}{dx}[arcsen \ u] = \dfrac{u'}{\sqrt{1 - u^2}}$

18. $\dfrac{d}{dx}[arccos \ u] = \dfrac{-u'}{\sqrt{1 - u^2}}$

19. $\dfrac{d}{dx}[arctg \ u] = \dfrac{u'}{1 + u^2}$

20. $\dfrac{d}{dx}[arcctg \ u] = \dfrac{-u'}{1 + u^2}$

21. $\dfrac{d}{dx}[arcsec \ u] = \dfrac{u'}{|u|\sqrt{u^2 - 1}}$

22. $\dfrac{d}{dx}[arccosec \ u] = \dfrac{-u'}{|u|\sqrt{u^2 - 1}}$

Fórmulas básicas de integración

1. $\displaystyle\int kf(u) \ du = k \int f(u) \ du$

2. $\displaystyle\int [f(u) \pm g(u)] \ du = \int f(u) \ du \pm \int g(u) \ du$

3. $\displaystyle\int du = u + C$

4. $\displaystyle\int u^n \ du = \dfrac{u^{n+1}}{n + 1} + C, \ n \neq -1$

5. $\displaystyle\int \dfrac{du}{u} = \ln |u| + C$

6. $\displaystyle\int e^u \ du = e^u + C$

7. $\displaystyle\int sen \ u \ du = -\cos u + C$

8. $\displaystyle\int \cos u \ du = sen \ u + C$

9. $\displaystyle\int tg \ u \ du = -\ln |\cos u| + C$

10. $\displaystyle\int ctg \ u \ du = \ln |sen \ u| + C$

11. $\displaystyle\int \sec u \ du = \ln |\sec u + tg \ u| + C$

12. $\displaystyle\int cosec \ u \ du = -\ln |cosec \ u + ctg \ u| + C$

13. $\displaystyle\int \sec^2 u \ du = tg \ u + C$

14. $\displaystyle\int cosec^2 u \ du = -ctg \ u + C$

15. $\displaystyle\int \sec u \ tg \ u \ du = \sec u + C$

16. $\displaystyle\int cosec \ u \ ctg \ u \ du = -cosec \ u + C$

17. $\displaystyle\int \dfrac{du}{\sqrt{a^2 - u^2}} = arcsen \ \dfrac{u}{a} + C$

18. $\displaystyle\int \dfrac{du}{a^2 + u^2} = \dfrac{1}{a} arctg \ \dfrac{u}{a} + C$

19. $\displaystyle\int \dfrac{du}{u\sqrt{u^2 - a^2}} = \dfrac{1}{a} arcsec \ \dfrac{|u|}{a} + C$