Notas.

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REGLAS DE DERIVACIÓN

1. $(c)' = 0$
2. $(x)' = 1$
3. $(u(x) \pm v(x))' = u'(x) \pm v'(x)$
4. $(cu(x))' = cu'(x)$
5. $(u(x) \cdot v(x))' = u'(x)v(x) + u(x)v'(x)$
6. $\left(\frac{u(x)}{g(x)}\right)' = \frac{u'(x)v(x) - u(x)v'(x)}{[v(x)]^2}, \quad (v(x) \neq 0)$
7. $\left(\frac{c}{v(x)}\right) = -\frac{cv'(x)}{[v(x)]^2}, \quad (v(x) \neq 0)$

TABLA DE DERIVADAS

1. $f(x) = [g(x)]^n \Rightarrow f'(x) = n[g(x)]^{n-1}g'(x)$
2. $f(x) = a^{g(x)} \Rightarrow f'(x) = a^{g(x)}g'(x)\ln a$
3. $f(x) = \ln_a g(x) \Rightarrow f'(x) = \frac{g'(x)}{g(x)\ln a}$
4. $f(x) = \sin g(x) \Rightarrow f'(x) = \cos g(x)g'(x)$
5. $f(x) = \cos g(x) \Rightarrow f'(x) = -\sin g(x)g'(x)$
6. $f(x) = \tan g(x) \Rightarrow f'(x) = \sec^2 g(x)g'(x)$
7. $f(x) = \cot g(x) \Rightarrow f'(x) = -\csc^2 g(x)g'(x)$
8. $f(x) = \arcsin g(x) \Rightarrow f'(x) = \frac{g'(x)}{\sqrt{1-[g(x)]^2}}$
9. $f(x) = \arccos g(x) \Rightarrow f'(x) = -\frac{g'(x)}{\sqrt{1-[g(x)]^2}}$

10. $f(x) = \arctan g(x) \Rightarrow f'(x) = \frac{g(x)}{1+[g(x)]^2}$

11. $f(x) = \text{arccot} g(x) \Rightarrow f'(x) = -\frac{g'(x)}{1+[g(x)]^2}$

12. Continuara

REGLAS PRINCIPALES PARA LA INTEGRACIÓN.

1. Si $F'(x) = f(x)$, entonces
   $\int f(x)dx = F(x) + C$, donde C es una constante arbitraria.

2. $\int Af(x)dx = A\int f(x)dx$, donde A es una constante.

3. $\int [f_1(x) \pm f_2(x)]dx = \int f_1(x)\,dx \pm \int f_2(x)\,dx.$

4. Si $\int f(x)\,dx = F(x) + C$ y $u = \varphi(x)$, se tiene, $\int f(u)\,du = F(u) + C.$

TABLA DE INTEGRALES INMEDIATAS

1. $\int x^n dx = \dfrac{x^{n+1}}{n+1} + C, \quad n \neq -1$

2. $\int \dfrac{dx}{x} = \ln|x| + C$

3. $\int \dfrac{dx}{x^2+a^2} = \dfrac{1}{a}\arctan\dfrac{x}{a} + C = -\dfrac{1}{a}\text{arccot}\dfrac{x}{a} + C_1, \quad (a \neq 0)$

4. $\int \dfrac{dx}{x^2-a^2} = \dfrac{1}{2a}\ln\dfrac{x-a}{x+a} + C, \quad (a \neq 0)$

5. $\int \dfrac{dx}{\sqrt{x^2+a}} = \ln|x + \sqrt{x^2+a}| + C, \quad (a \neq 0)$

6. $\int \dfrac{dx}{\sqrt{a^2-x^2}} + C = \arcsin\dfrac{x}{a} + c = -\arccos\dfrac{x}{a} + C_1, \quad (a > 0)$

7. $\int a^x dx = \dfrac{a^x}{\ln a} + C, \quad (a > 0)$

8. $\int \sin x\,dx = -\cos x + C$

9. $\int \cos x\,dx = \sin x + C$

10. $\int \sec^2 x\, dx = \tan x + C$

11. $\int \csc^2 x\, dx = -\cot x + C$

12. $\int \csc x\, dx = \ln|\tan\frac{x}{2}| + C = \ln|\sec x - \cot x| + C$

13. $\int \sec x\, dx = \ln|\tan(\frac{x}{2} - \frac{\pi}{4})| + C = \ln|\tan x + \sec x| + C$

14. $\int \sinh x\, dx = \cosh x + C$

15. $\int \cosh x\, dx = \sinh x + C$

16. $\int \frac{dx}{\cosh^2 x} = \tanh x + C$

17. $\int \frac{dx}{\sinh^2 x} = -\coth x + C$

18. Continuara