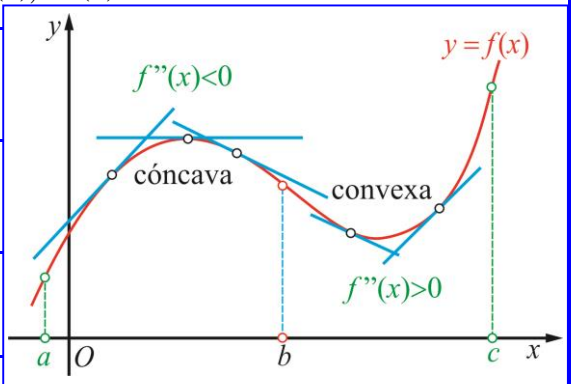
TÁBOA DE DERIVADAS DAS FUNCIÓNS PRINCIPAIS

1	$y = c\cdot f(x)$, c constante	$y' = c\cdot f'(x)$, c constante. $y = cx \to y' = c$
2	$y = \left(f(x)\right)^n$	$y' = n\cdot\left(f(x)\right)^{n-1}\cdot f'(x)$. $y = x^n \to y' = nx^{n-1}$
3	$y = \ln\left(f(x)\right)$	$y' = \dfrac{f'(x)}{f(x)}$. $y = \ln(x) \to y' = \dfrac{1}{x}$
4	$y = \log_a\left(f(x)\right)$	$y' = \dfrac{f'(x)}{f(x)}\cdot\dfrac{1}{\ln(a)} = \dfrac{f'(x)}{f(x)}\cdot\log_a(e)$. $y = \log_a(x) \to y' = \dfrac{1}{x}\dfrac{1}{\ln(a)}$
5	$y = e^{f(x)}$	$y' = e^{f(x)}\cdot f'(x)$. $y = e^x \to y' = e^x$
6	$y = a^{f(x)}$	$y' = a^{f(x)}\cdot f'(x)\cdot\ln(a)$. $y = a^x \to y' = a^x\ln(a)$
7	$y = \text{sen}\left(f(x)\right)$	$y' = \cos\left(f(x)\right)\cdot f'(x)$. $y = \text{sen}(x) \to y' = \cos(x)$
8	$y = \cos\left(f(x)\right)$	$y' = -\text{sen}\left(f(x)\right)\cdot f'(x)$. $y = \cos(x) \to y' = -\text{sen}(x)$
9	$y = \tan\left(f(x)\right)$	$y' = \dfrac{f'(x)}{\cos^2\left(f(x)\right)} = \sec^2\left(f(x)\right)\cdot f'(x) = \left(1+\tan^2\left(f(x)\right)\right)\cdot f'(x)$
10	$y = \cot\left(f(x)\right)$	$y' = -\dfrac{f'(x)}{\text{sen}^2\left(f(x)\right)} = -\csc^2\left(f(x)\right)\cdot f'(x) = -\left(1+\cot^2\left(f(x)\right)\right)\cdot f'(x)$
11	$y = \sec\left(f(x)\right)$	$y' = \sec\left(f(x)\right)\cdot\tan\left(f(x)\right)\cdot f'(x)$
12	$y = \csc\left(f(x)\right)$	$y' = -\csc\left(f(x)\right)\cdot\cot\left(f(x)\right)\cdot f'(x)$
13	$y = \text{arc sen}\left(f(x)\right)$	$y' = \dfrac{f'(x)}{\sqrt{1-\left(f(x)\right)^2}}$
14	$y = \arccos\left(f(x)\right)$	$y' = -\dfrac{f'(x)}{\sqrt{1-\left(f(x)\right)^2}}$
15	$y = \arctan\left(f(x)\right)$	$y' = \dfrac{f'(x)}{1+\left(f(x)\right)^2}$
16	$y = \text{arccot}\left(f(x)\right)$	$y' = -\dfrac{f'(x)}{1+\left(f(x)\right)^2}$
17	$y = \sqrt{f(x)}$	$y' = \dfrac{f'(x)}{2\sqrt{f(x)}}$
18	$y = \dfrac{1}{\sqrt{f(x)}}$	$y' = -\dfrac{f'(x)}{2f(x)\sqrt{f(x)}} = -\dfrac{f'(x)}{2f(x)^{3/2}}$
19	$y = f(x)g(x)$	$y' = f'(x)g(x) + f(x)g'(x)$
20	$y = \dfrac{f(x)}{g(x)}$	$y' = \dfrac{f'(x)g(x) - f(x)g'(x)}{\left(g(x)\right)^2}$



$$\begin{cases} f'(x) > 0 \to \text{crecente} \\ f'(x) = 0 \to \text{punto crítico} \begin{cases} f''(x) < 0 \to \text{máximo} \\ f''(x) > 0 \to \text{mínimo} \end{cases} \\ f'(x) < 0 \to \text{decrecente} \end{cases}$$

TÁBOA DE INTEGRAIS INMEDIATAS

1	$\int x^n dx = \frac{x^{n+1}}{n+1} + C$, $\int f^n(x) \cdot f'(x) dx = \frac{f^{n+1}(x)}{n+1} + C$, $n \neq -1$, C constante arbitraria		
2	$\int \frac{dx}{x} = \ln(x) + C$; $\int \frac{f'(x)dx}{f(x)} = \ln(\lvert f(x) \rvert) + C$		
3	$\int \operatorname{sen}(x) dx = -\cos(x) + C$; $\int \operatorname{sen}(f(x)) \cdot f'(x) dx = -\cos(f(x)) + C$		
4	$\int \cos(x) dx = \operatorname{sen}(x) + C$; $\int \cos(f(x)) \cdot f'(x) dx = \operatorname{sen}(f(x)) + C$		
5	$\int \frac{dx}{\cos^2(x)} = \tan(x) + C$; $\int \frac{f'(x)dx}{\cos^2(f(x))} = \tan(f(x)) + C$		
6	$\int \frac{dx}{\operatorname{sen}^2(x)} = -\cot(x) + C$; $\int \frac{f'(x)dx}{\operatorname{sen}^2(f(x))} = -\cot(f(x)) + C$		
7	$\int \tan(x) dx = -\ln(\lvert \cos(x) \rvert) + C$; $\int \tan(f(x)) \cdot f'(x) dx = -\ln(\lvert \cos(f(x)) \rvert) + C$		
8	$\int \cot(x) dx = \ln(\lvert \operatorname{sen}(x) \rvert) + C$; $\int \cot(f(x)) \cdot f'(x) dx = \ln(\lvert \operatorname{sen}(f(x)) \rvert) + C$		
9	$\int e^x dx = e^x + C$; $\int e^{f(x)} f'(x) dx = e^{f(x)} + C$; $\int a^x dx = \frac{a^x}{\ln(a)} + C$; $\int a^{f(x)} \cdot f'(x) dx = \frac{a^{f(x)}}{\ln(a)} + C$		
10	$\int \frac{dx}{1+x^2}$; $\int \frac{dx}{a^2+x^2} = \frac{1}{a}\arctan\left(\frac{x}{a}\right) + C$; $\int \frac{f'(x)}{a^2+f^2(x)} dx = \frac{1}{a}\arctan\left(\frac{f(x)}{a}\right) + C$		
11	$\int \frac{dx}{\sqrt{1-x^2}} = \arcsen(x) + C$; $\int \frac{dx}{\sqrt{a^2-x^2}} = \arcsen\left(\frac{x}{a}\right) + C$; $\int \frac{f'(x)}{\sqrt{a^2-f^2(x)}} dx = \arcsen\left(\frac{f(x)}{a}\right) + C$		
12	$\int \frac{dx}{1-x^2} = \frac{1}{2}\ln\left(\left\lvert \frac{1+x}{1-x} \right\rvert\right) + C$; $\int \frac{dx}{a^2-x^2} = \frac{1}{2a}\ln\left(\left\lvert \frac{a+x}{a-x} \right\rvert\right) + C$; $\int \frac{f'(x)dx}{a^2-f^2(x)} = \frac{1}{2a}\ln\left(\left\lvert \frac{a+f(x)}{a-f(x)} \right\rvert\right) + C$		
13	$\int \frac{dx}{\sqrt{x^2 \pm 1}} = \ln\left(\left\lvert x + \sqrt{x^2 \pm 1} \right\rvert\right) + C$; $\int \frac{dx}{\sqrt{x^2 \pm a^2}} = \ln\left(\left\lvert x + \sqrt{x^2 \pm a^2} \right\rvert\right) + C$; $\int \frac{f'(x)dx}{\sqrt{f^2(x) \pm a^2}} = \ln\left(\left\lvert f(x) + \sqrt{f^2(x) \pm a^2} \right\rvert\right) + C$		
14	Integración por partes: $\int u \cdot dv = u \cdot v - \int v \cdot du$		
a	$\int x^n e^x dx$	$u = x^n$	$dv = e^x dx$
b	$\int x^n \operatorname{sen}(x) dx$	$u = x^n$	$dv = \operatorname{sen}(x) dx$
c	$\int x^n \cos(x) dx$	$u = x^n$	$dv = \cos(x) dx$
d	$\int x^n \ln(x) dx$	$u = \ln(x)$	$dv = x^n dx$
e	$\int \arctan(x) dx$	$u = \arctan(x)$	$dv = dx$
f	$\int \arcsen(x) dx$	$u = \arcsen(x)$	$dv = dx$