# 5.22 Reglas de derivación

Las reglas de las derivadas son fórmulas rápidas para calcular la pendiente de una función sin usar el límite largo.

| Reglas de derivación | |
|---|---|
| $y = k \implies y' = 0$ | |
| $y = x \implies y' = 1$ | |
| $y = ku \implies y' = k \cdot u'$ | |
| $y = u + v$ | $y' = u' + v'$ |
| $y = u \cdot v$ | $y' = u' \cdot v + u \cdot v'$ |
| $y = \dfrac{u}{v}$ | $y' = \dfrac{u' \cdot v - u \cdot v'}{v^2}$ |
| $y = x^n \implies y' = n \cdot x^{n-1}$ | $y' = u^n \implies y' = n \cdot u^{n-1} \cdot u'$ |
| $y' = a^x \implies y' = a^x \cdot \ln a$ | $y' = a^u \implies y' = u' \cdot a^u \cdot \ln a$ |
| $y = e^x \implies y' = e^x$ | $y = e^u \implies y' = u' \cdot e^u$ |
| $y' = \log_a x \implies y' = \dfrac{1}{x} \cdot \log_a e$ | $y' = \log_a u \implies y' = \dfrac{u'}{u} \cdot \log_a e$ |
| $y = \ln x \implies y' = \dfrac{1}{x}$ | $y = \ln u \implies y' = \dfrac{u'}{u}$ |
| $y = \operatorname{sen} x \implies y' = \cos x$ | $y = \operatorname{sen} u \implies y' = u' \cdot \cos u$ |
| $y = \cos x \implies y' = -\operatorname{sen} x$ | $y = \cos u \implies y' = -u' \cdot \operatorname{sen} u$ |
| $y = \tan x \implies y' = \sec^2 x$ | $y = \tan u \implies y' = u' \cdot \sec^2 u$ |
| $y = \arctan x \implies y' = \dfrac{1}{1+x^2}$ | $y = \arctan x \implies y' = \dfrac{u'}{1+u^2}$ |

**Ejercicios**:

$f(x) = -2x$

$f(x) = -2x + 2$

$f(x) = -2x^2 - 5$

$f(x) = \dfrac{5}{x^5}$

$f(x) = \dfrac{5}{x^5} + \dfrac{3}{x^2}$