## Table of derivatives

1.$(C)' = 0,\ C$ is a constant,

2.$(x)' = 1$,

3.$(x^n)' = nx^{n-1}$,

4.$(e^x)' = e^x$, $\qquad 4a.(b^x)' = b^x \ln b$,

5.$(\ln x)' = \dfrac{1}{x}$, $\qquad 5a.(\log_b x)' = \dfrac{1}{x \ln b}$.

## Differentiation formulas

(a) $(cf(x))' = cf'(x)$, $c$ is a constant,

(b) $(f(x) + g(x))' = f'(x) + g'(x)$,

(c) $(f(x) - g(x))' = f'(x) - g'(x)$,

(d) $(f(x)g(x))' = f'(x)g(x) + f(x)g'(x)$,

(e) $\left(\dfrac{f(x)}{g(x)}\right)' = \dfrac{f'(x)g(x) - g'(x)f(x)}{[g(x)]^2}$,

(f) $(f(g(x)))' = f'(g(x))g'(x)$.

(g) $([u(x)]^n)' = n[u(x)]^{n-1}u'(x)$

(h) $(\ln[u(x)])' = \dfrac{u'(x)}{u(x)}$

(i) $(e^{u(x)})' = e^{u(x)}u'(x)$