

Tableau Des Règles de Dérivations De Quelques Fonctions

| Dérivées des Fonctions Usuelles | | |
|---|---|---|
| $f(x)$ | $f'(x)$ | Exemple |
| x^α | $(x^\alpha)' = \alpha x^{\alpha-1}$ | $(x^2)' = 2x$ |
| | | $(x^n)' = nx^{n-1}$ |
| | | $(\sqrt{x})' = \frac{1}{2\sqrt{x}}$ |
| | | $\left(\frac{1}{\sqrt{x}}\right)' = \frac{-1}{2x^{3/2}}$ |
| e^x | $(e^x)' = e^x$ | |
| $\ln x$ | $(\ln x)' = \frac{1}{x}$ | |
| Dérivées des Fonctions composées | | |
| $f(u(x))$ | $[f(u(x))]' = u'(x)f'(u(x))$ | Exemple |
| $(u(x))^\alpha$ | $\alpha u'(x)(u(x))^{\alpha-1}$ | $[(x^3 + \sqrt{x})^5]' = 5(3x^2 + \frac{1}{2\sqrt{x}})(x^3 + \sqrt{x})^4$ |
| | | $(\sqrt{u(x)})' = \frac{u'(x)}{2\sqrt{u(x)}}$ $(\sqrt{x^2 + e^x})' = \frac{2x + e^x}{2\sqrt{x^2 + e^x}}$ |
| $\frac{1}{(u(x))^\alpha}$ | $\frac{-\alpha u'(x)}{(u(x))^{\alpha+1}}$ | $\left(\frac{1}{\sqrt{u(x)}}\right)' = \frac{-u'(x)}{2(u(x))^{3/2}}$ $\left(\frac{1}{\sqrt{x^2 + e^x}}\right)' = \frac{-(2x + e^x)}{2(x^2 + e^x)^{3/2}}$ |
| $e^{u(x)}$ | $u'(x)e^{u(x)}$ | $(e^{-(x^2+x)})' = -(2x + 1)e^{-(x^2+x)}$ |
| $\ln u(x)$ | $\frac{u'(x)}{u(x)}$ | $(\ln(x^3 + x))' = \frac{3x^2 + 1}{x^3 + x}$ |