RPP 1

Tangente

$$\mathcal{T}_a : \ y = f'(a)(x-a) + f(a)$$

Approximations en Physique

$$(1+u)^n \approx 1+nu \qquad \mathrm{e}^u \approx 1+u \qquad \sin u \approx u$$

$$\frac{1}{1-u} \approx 1+u \qquad \frac{1}{1+u} \approx 1-u$$

pour $u \ll 1$.

Fonctions usuelles

$$\left(x^n\right)' = nx^{n-1} \qquad \left(\frac{1}{x}\right)' = -\frac{1}{x^2} \qquad \left(\sqrt{x}\right)' = \frac{1}{2\sqrt{x}}$$

$$\sin' = \cos \qquad \cos' = -\sin$$

Lemme de factorisation

$$a^n - b^n = (a-b)\left(a^{n-1} + a^{n-2}b + \cdots + ab^{n-2} + b^{n-1}\right)$$

Opérations

$$(u+v)' = u'+v' \qquad (\lambda u)' = \lambda u' \qquad (uv)' = u'v + uv' \qquad \left(\frac{1}{u}\right)' = -\frac{u'}{u^2}$$

$$\left(\frac{u}{v}\right)' = \frac{u'v - uv'}{v^2} \qquad \left(\sqrt{u}\right)' = \frac{u'}{2\sqrt{u}} \qquad \left(u^n\right)' = nu'u^{n-1}$$

Composition

$$\left(f(ax+b)\right)' = af'(ax+b)$$