28.01.25

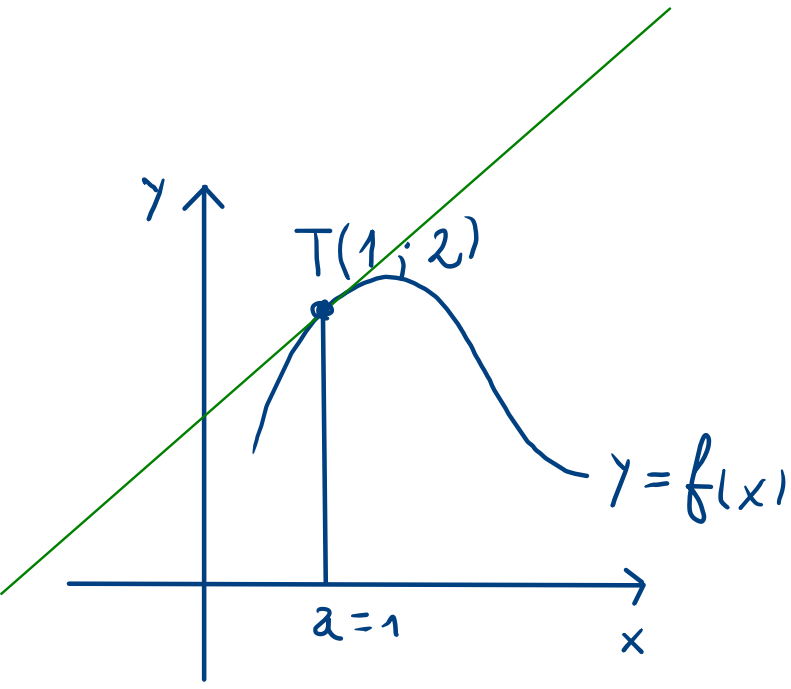
2.9.15 Former l'équation de la tangente au graphe de f en son point d'abscisse a, si :

a) $f(x) = 1 + 2x - x^3$, $a = 1$

b) $f(x) = \dfrac{x+3}{x}$, $a = 3$

c) $f(x) = \sqrt{2x+1}$, $a = 4$

d) $f(x) = \dfrac{\sin(x)}{\sin(x) + \cos(x)}$, $a = 0$



a) La tangente s'écrit :

$$y = mx + h$$

en $x = a$, $m = f'(a)$.

Donc $f'(x) = 2 - 3x^2 \Rightarrow f'(1) = \boxed{-1 = m}$

Le point par lequel passe la tangente $T(1;2)$, $2 = f(1)$.

Donc $2 = -1 \cdot 1 + h \Rightarrow h = 3 \Rightarrow \boxed{y = -x + 3}$

c) $f(x) = \sqrt{2x+1}$, $a = 4$

$(\sqrt{u})' = \dfrac{u'}{2\sqrt{u}}$ Formulaire

$f'(x) = \dfrac{2^{1}}{2\sqrt{2x+1}} = \dfrac{1}{\sqrt{2x+1}}$

1) pente : $f'(4) = \dfrac{1}{3}$ $\Rightarrow$ tangente $y = \frac{1}{3}x + h$

2) $T(4;3)$ $\Rightarrow$ $3 = \frac{1}{3} \cdot 4 + h$ $\Rightarrow$ $h = 3 - \frac{4}{3} = \frac{5}{3}$

$\Rightarrow$ $\boxed{y = \frac{1}{3}x + \frac{5}{3}}$