$\exists c_n \in]n, n+1[$

$$g'(c_n) = \frac{g(n+1)-g(n)}{n+1-n} = \ln\left(\frac{f(n+1)}{f(n)}\right)$$

Or, $\lim_{n\to+\infty} g'(c_n) = -\infty$

donc $\ln\left(\frac{f(n+1)}{f(n)}\right) \longrightarrow -\infty$

donc $\frac{f(n+1)}{f(n)} \longrightarrow 0$

$\sum f(n)$ converge par d'Alembert

Martin ex. 753

$$T \left| \begin{array}{l} [0,2\pi] \to \mathbb{R} \\ \lambda \longrightarrow T(\lambda) \end{array} \right.$$

$$g(\lambda) = T(\pi+\lambda) - T(\lambda)$$

$$g(\pi) = T(2\pi) - T(\pi)$$

$$g(0) = T(\pi) - \underbrace{T(0)}_{=T(2\pi)} = -g(\pi)$$

$\rightarrow g(0) = 0$, $(0,\pi)$ conviennent $\hat{m}$ T^{ure}

$\longrightarrow$ wlog $g(0) > 0$ donc $g(\pi) < 0$

g continue donc par TVI, $\exists \lambda_0 \in [0,\pi]$, $g(\lambda_0) = 0$

$$T(\pi+\lambda_0) = T(\lambda_0)$$

Nathanaël $\boxed{\text{ex. } 718}$ $a < b \in \mathbb{R}$, $f, g \in \mathcal{C}^0([a,b],\mathbb{R})$, $g > 0$

Mq $\exists c \in [a,b]$ tq $\int_a^b f(t)g(t)\,dt = f(c)\int_a^b g(t)\,dt$

Par le th. des bornes atteintes, $\exists m \in [a,b]$ tq $f(m) = \min_{[a,b]} f$

$\exists M \in [a,b]$ tq $f(M) = \max_{[a,b]} f$