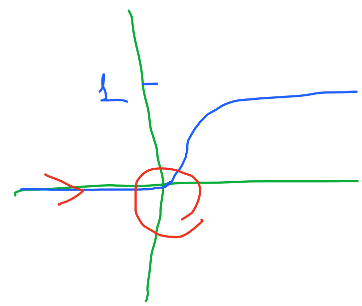
viernes, 9 de octubre de 2020 16:16

⑥ Inductivamente pruebe que

$$\beta^{(n)}(0) = 0 \qquad \forall n.$$

Concluya que β es C^{∞}, d

$$\beta(x) = \begin{cases} 0 & x \le 0 \\ e^{-\frac{1}{x^2}} & x > 0 \end{cases}$$



$\forall x \cancel{\le} 0$ $\quad \lim_{x \to 0^-} \frac{\beta(x) - \beta(0)}{x - 0} = 0 =$

$\boxed{x > 0}$

$$\beta'(x) = \lim_{x \to 0^+} \frac{\beta(x) - \beta(0)}{x - 0} = ?$$

$$e^x = \sum_{n \ge 0} \frac{x^n}{n!}$$

$$\beta(x) = e^{-\frac{1}{x^2}} = \sum \frac{(-1/x^2}{\;}$$

$n \geq 0$ $\quad n$

$$\boxed{B(x) = \sum_{n \geq 0} \frac{(-1)^n}{x^{2n}\, n!}}$$

$$B'(x) = \frac{(-1)^n}{n!} \cdot -2n\cancel{x}^{-2n-1} = \frac{(-1)^n x^{-2n}}{n!} \cdot -$$

$$B'(x) = -2n x^{-1} \underbrace{B(x)}_{B(0)=0} \qquad \boxed{B'(0) =}$$

$$B''(x) = 2n x^{-2} B(x) - 2n x^{-1}$$

$$B^{(n)}(x) = \pm P_0(x) B(x) \pm P_1 B'(x) \pm P\, B''($$

$n = 1$ $\quad B'(0) = 0$ ✓

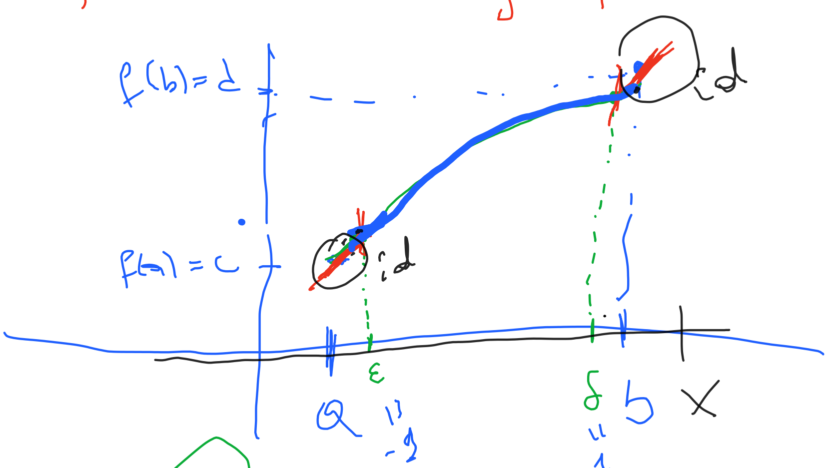
$n=k)$ ~~sup~~ $B^{k}(0)=0$ $\forall k$

$n=k+1)$ $B^{k+1}(0) = B^{n+1}(B, B', B'',$

$= 0$ ※

(9) Use una bump function para con un difeo $f:[a,b]\to[c,d]$ tal q

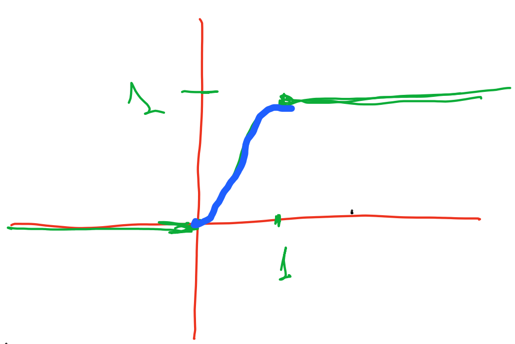
$f'(a)=f'(b)=1$ y $f(a)=c$ y $f(b)=d$



$f(x)=\int_{-\infty}^{x} B(t)$

$f'(a)=f'($

$\boxed{f'(x}$



$x > 1$

$B(x) = \begin{cases} 1 & x \geq \\ e^{-\frac{1}{\left(\frac{x}{1-x}\right)^2}} & 1 < \\ 0 & \end{cases}$

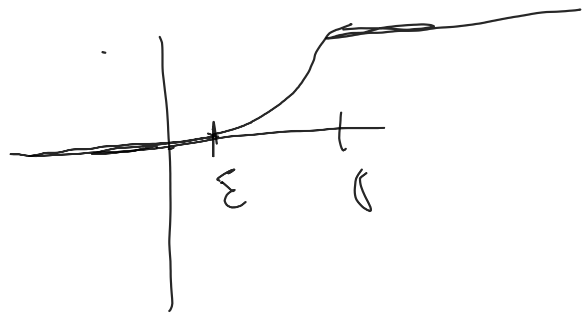
$f(x) = \int^{x} B(t)\,dt$

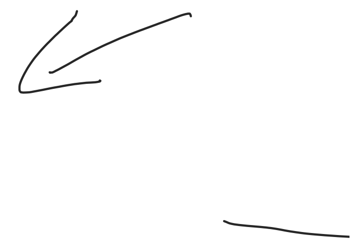
$f(x) = \int_{-\infty} \ldots \quad (-\infty, x)$

$f'(x) = B(x) \qquad x > 1 \qquad \delta = 0$

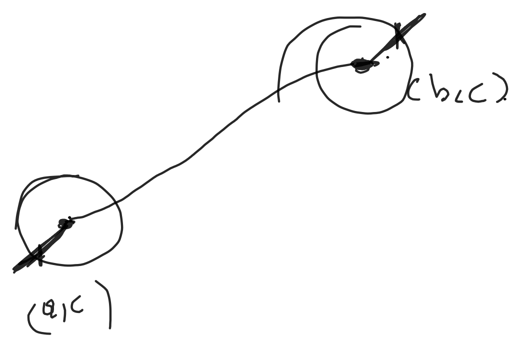
$= \underline{1}$ #

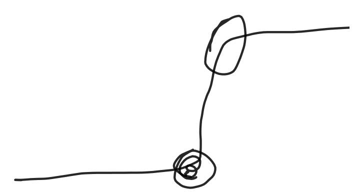
$B(x) = \begin{cases} \ldots & x \geq \ldots \\ e^{-\frac{1}{\left(\frac{x}{\delta - x}\right)^2}} + \varepsilon & \varepsilon < \ldots \\ 0 & x \ldots \end{cases}$





$f = \int_{-\infty}^{x} B(t)\,dt$





T. Möbius