Uvážme Taylorov rozvoj funkcie f: $f(x)=\sum_{n=0}^{\infty}\frac{1}{n!}f^{(n)}(t)(x-t)^n$.

Upravme g na $g(x)=\begin{cases}1 & x\in\langle-\delta,0) \\ -1 & x\in(0,\delta\rangle \\ 0 & \text{inak}\end{cases}$ aby to vyšlo, inak vyjde znamienko -.

$$(f*g)(t)=\int_{-\infty}^{\infty} g(x)f(t-x)dx=\int_{-\delta}^{0} g(x)f(t-x)dx+\int_{0}^{\delta} g(x)f(t-x)dx=$$

$$=\int_{-\delta}^{0} f(t)+f'(t)\cdot(-x)+f''(t)\cdot\frac{1}{2}(-x)^2+\dots+o(x^3)\,dx+\int_{0}^{\delta}-f(t)-f'(t)(-x)-f''(t)\,\frac{1}{2}(-x)^2-\dots-o(x^3)\,dx=$$

$$=\left[f(t)x-\frac{1}{2}f'(t)x^2+f''(t)\cdot\frac{1}{6}x^3+\dots\right]_{-\delta}^{0}+\left[-f(t)x+\frac{1}{2}f'(t)x^2-\frac{1}{6}f''(t)x^3+\dots\right]_{0}^{\delta}=$$

$$=\cancel{\delta f(t)}+\frac{1}{2}f'(t)\cdot\delta^2+\delta^3\left(\frac{1}{6}f''(t)+\dots\right)-\cancel{\delta f(t)}+\frac{1}{2}f'(t)\cdot\delta^2+\delta^3\left(-\frac{1}{6}f''(t)+\dots\right)=$$

$$=\frac{2}{2}\cdot f'(t)\cdot\delta^2+\delta^3(\dots)$$

$$\lim_{\delta\to0^+}\frac{1}{\delta^2}(f*g)(t)=\lim_{\delta\to0^+}\left(\frac{\delta^2}{\delta^2}f'(t)+\delta(\dots)\right)=f'(t)$$