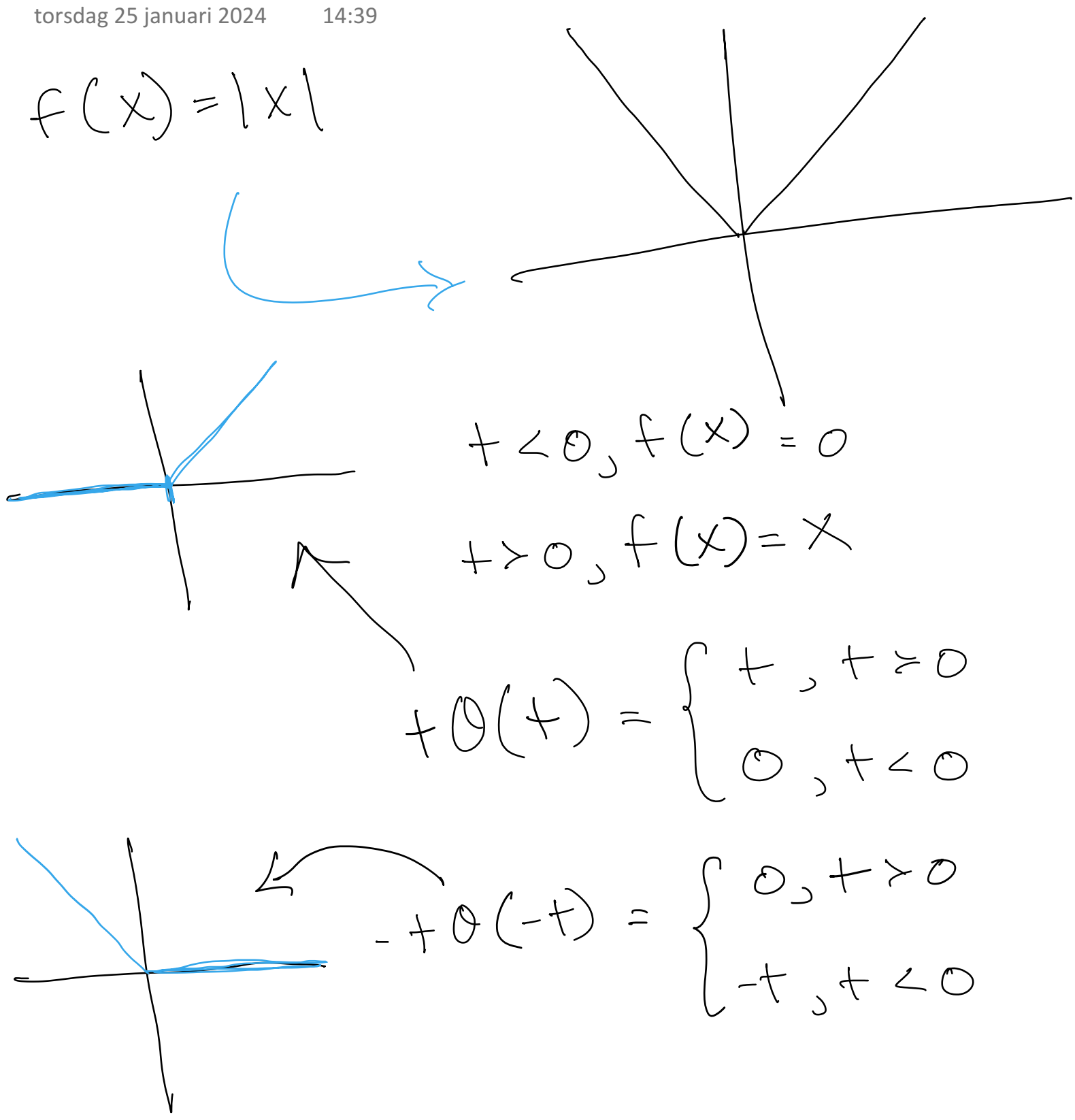
2.11*

torsdag 25 januari 2024 14:39

$f(x) = |x|$



$t < 0,\ f(x) = 0$

$t > 0,\ f(x) = x$

$t\theta(t) = \begin{cases} t, & t \geq 0 \\ 0, & t < 0 \end{cases}$

$-t\theta(-t) = \begin{cases} 0, & t > 0 \\ -t, & t < 0 \end{cases}$

$t < 0 \Rightarrow t\theta(t) - t\theta(-t) = 0 - t$

$t > 0 \Rightarrow t\theta(t) - t\theta(-t) = t + 0$

$f(x) = x\theta(x) - x\theta(-x)$

har inga språng

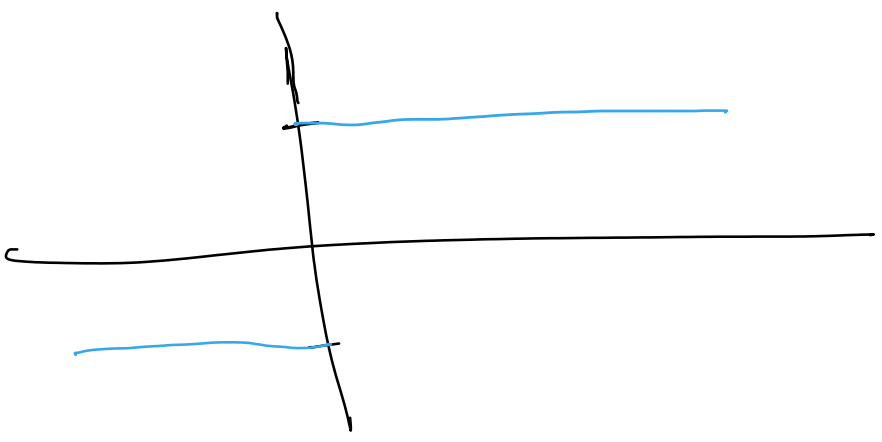
$\frac{d}{dx} x = 1$

$f'(x) = \theta(x) - \theta(-x) =$ s. 14

$= \theta(x) - (1 - \theta(x)) =$

$= 2\theta(x) - 1$

$2\theta(x) - 1 = \begin{cases} 1, & t > 0 \\ -1, & t < 0 \end{cases}$



har språng $x = 0$

$x = 0 \Rightarrow 1 - (-1) = 2$

$\frac{d}{dx} 2 = 0$

$f''(x) = 2\,\delta(x)$

Sv: $f'(x) = 2\theta(x) - 1$

$f''(x) = 2\delta(x)$