Exempel_2.2

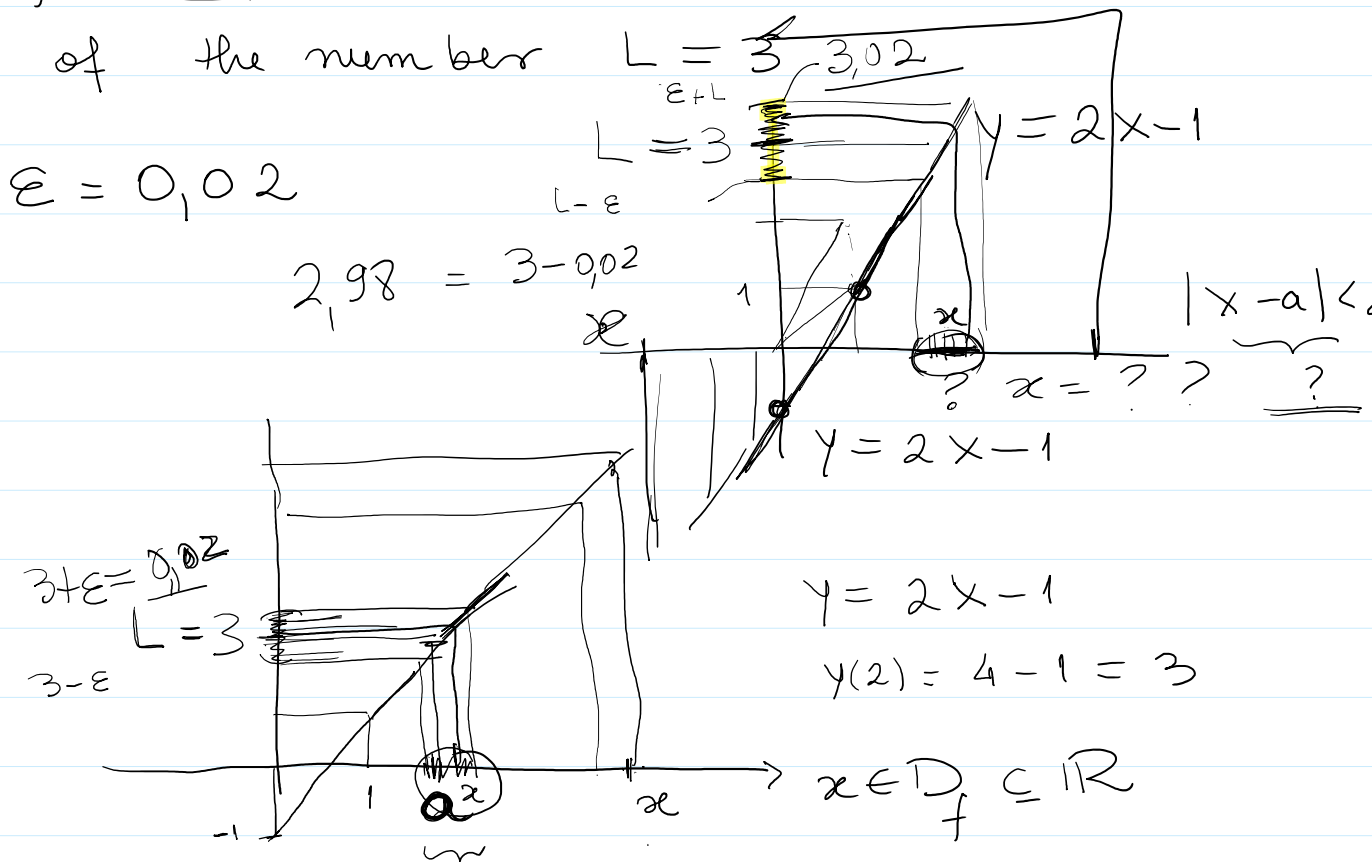
den 7 september 2020 13:54

Sidan 92 Exercises 1.5 # 3.

$f(x) = 2x - 1 \qquad L = 3$

? In what interval must $x$ be, if $f(x)$ MUST be within the given distance $\varepsilon$ of the number $L = 3$

$\varepsilon = 0{,}02$




$f(x) = 2x - 1 \qquad L = 3 \qquad \varepsilon = 0{,}02$

$|f(x) - L| < \varepsilon$

$|2x - 1 - 3| = |2x - 4| < \varepsilon = 0{,}02$

$\frac{|2x-4|}{2} < \frac{\varepsilon}{2} = \frac{0{,}02}{2} = 0{,}01$

$\delta$

$|x - 2| < 0{,}01$

När $|x-2| < 0{,}01 \implies |f(x)-L| = |2x-4| < 0{,}02$

$|x-a| < \delta \implies |f(x) - L| < \varepsilon$

$$|x-a| < \delta = \delta(\varepsilon) = \frac{\varepsilon}{2} \Rightarrow |f(x) - L| < \varepsilon$$

förslag enden 92 uppgift 3-10

Avslut

$|f(x) - 3| < \varepsilon = 0{,}02$ när

$|x - 2| < \frac{\varepsilon}{2} = 0{,}01$ $\qquad \delta = \frac{\varepsilon}{2} = \frac{0{,}02}{2} = 0{,}01$

$|x - \underset{\parallel}{2}| < \frac{\varepsilon}{2} = 0{,}01 \Rightarrow |f(x) - 3| < \varepsilon = 0{,}02$ □

$a$

$|x - a|$