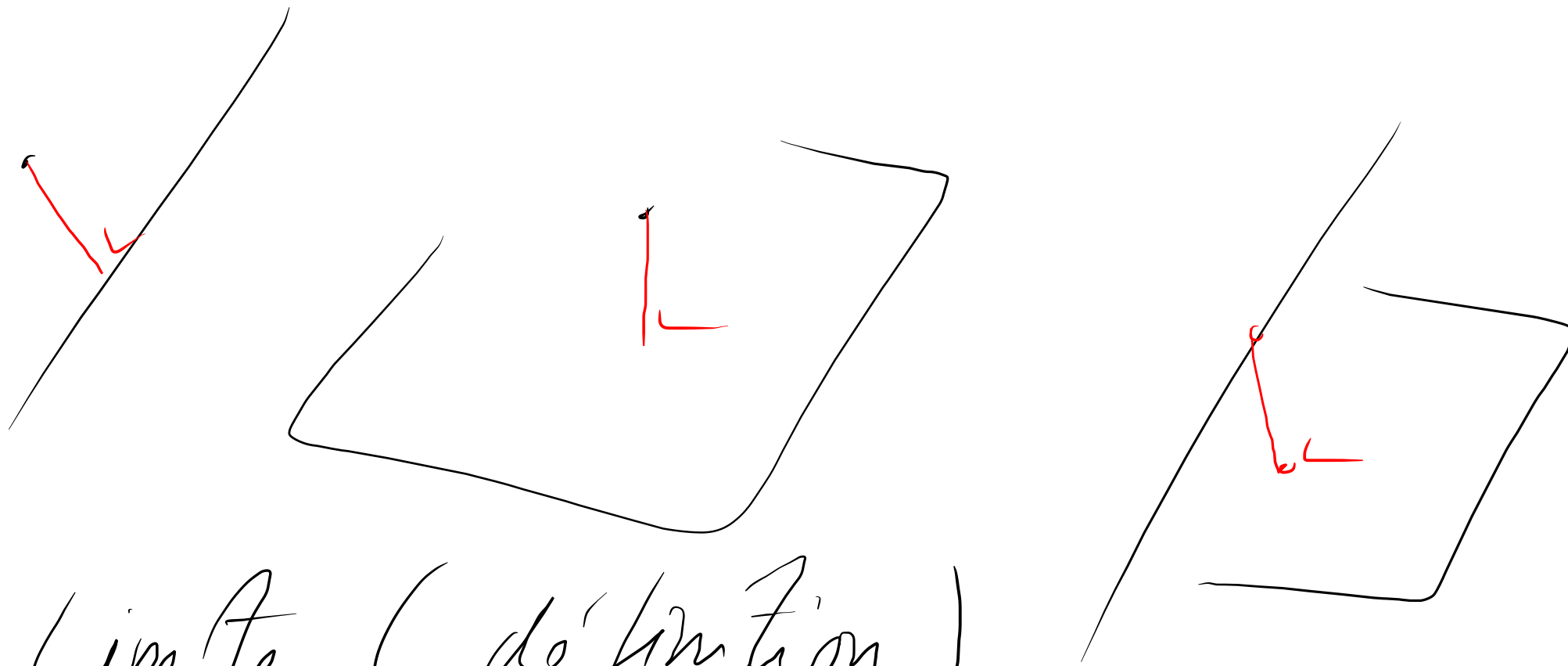


Exo 1

Géométrie (distances)



Exo 2

Limite (définition)

Exo 3

Calculs de limites

Expression math à une suite

Exo 4

injections / surjections / bijections

Exo 5

ExpLog

$$\sqrt[1]{1}$$

$$\sqrt[2]{2}$$

$$\sqrt[3]{3}$$

$$\sqrt[4]{4}$$

$$\sqrt[5]{5}$$



$$\sqrt[4]{2^2} = 2^{\frac{2}{4}} = 2^{\frac{1}{2}} = \sqrt{2}$$

Soit $(a_n)_{n \in \mathbb{N}}$ une suite. On dit que

$$\lim_{n \rightarrow \infty} a_n = 2$$

ssi

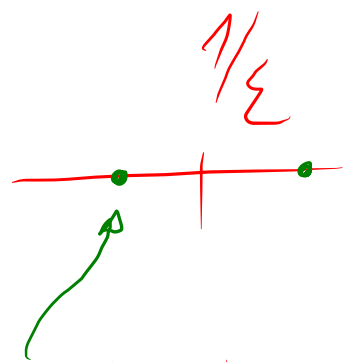
$$\forall \varepsilon > 0 \quad \exists N_\varepsilon \in \mathbb{N} \quad \forall n \geq N_\varepsilon$$

$$|a_n - 2| < \varepsilon$$

Informellement

$$a_n = 2 - \frac{1}{n}$$

$$\lim a_n = 2$$



$$\left| 2 - \frac{1}{n} - 2 \right| < \varepsilon$$

preuve: Soit $N_\varepsilon = \left\lceil \frac{1}{\varepsilon} \right\rceil + 1$ $\left| -\frac{1}{n} \right| < \varepsilon$

$$\text{Si } n > N_\varepsilon \Rightarrow n > \frac{1}{\varepsilon} \quad \frac{1}{n} < \varepsilon$$

$$\Rightarrow \varepsilon > \frac{1}{n}$$

$$\Rightarrow \varepsilon > \left| -\frac{1}{n} \right|$$

$$\frac{1}{\varepsilon} < n$$

$$\Rightarrow \left| \left(2 - \frac{1}{n} \right) - 2 \right| < \varepsilon$$

$$\Rightarrow |a_n - 2| < \varepsilon$$

(QFD)

2.4.5

b)

$$u_n = \frac{n}{n+1}$$

$$L = 1$$

$$\left| \frac{n}{n+1} - \frac{n+1}{n+1} \right| < 0,25$$

$$\varepsilon = 0,25$$

$$\left| \frac{n}{n+1} - 1 \right| < 0,25$$

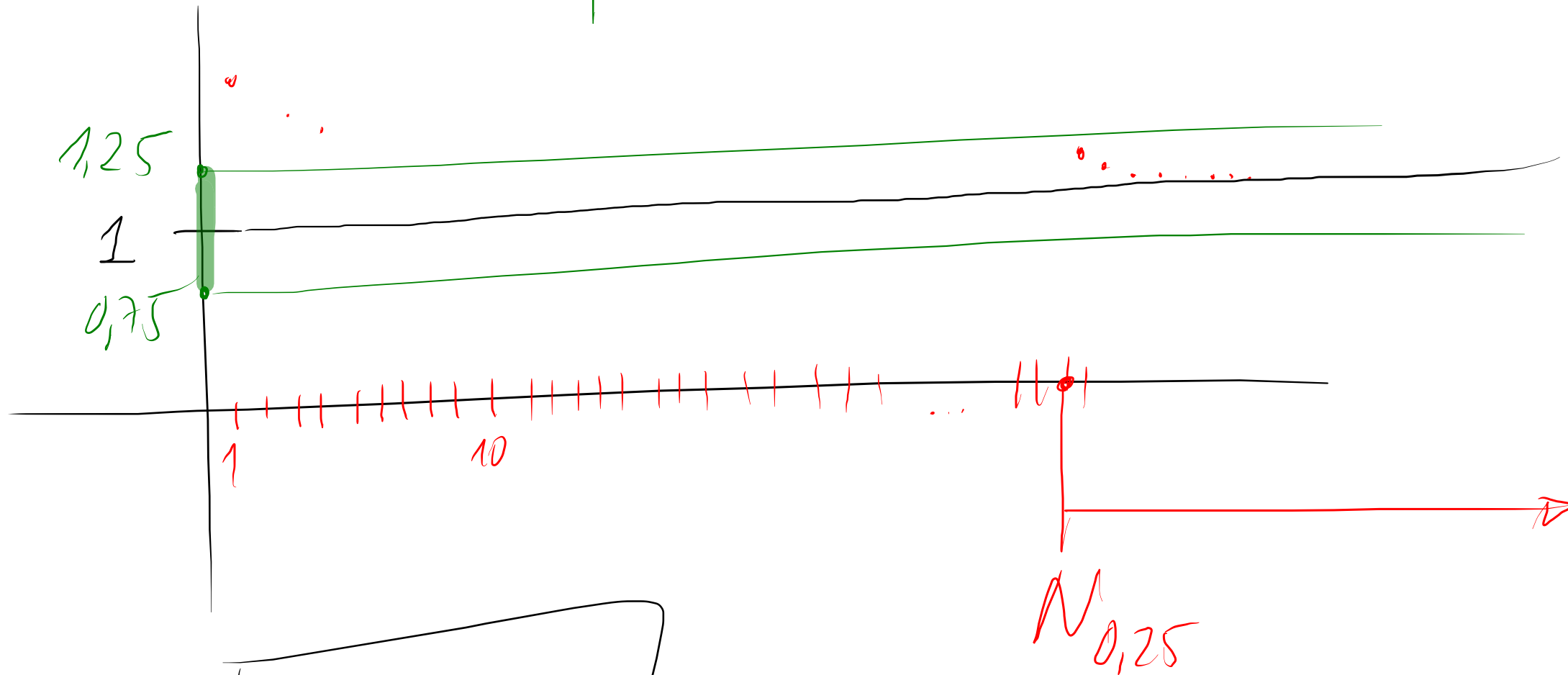
$$\left| \frac{\cancel{n} - \cancel{n} - 1}{n+1} \right| < 0,25$$

$$\left| -\frac{1}{n+1} \right| < 0,25$$

$$\frac{1}{n+1} < 0,25$$

$$4 \left(\frac{1}{0,25} \right) < n+1$$

$$n > 3$$

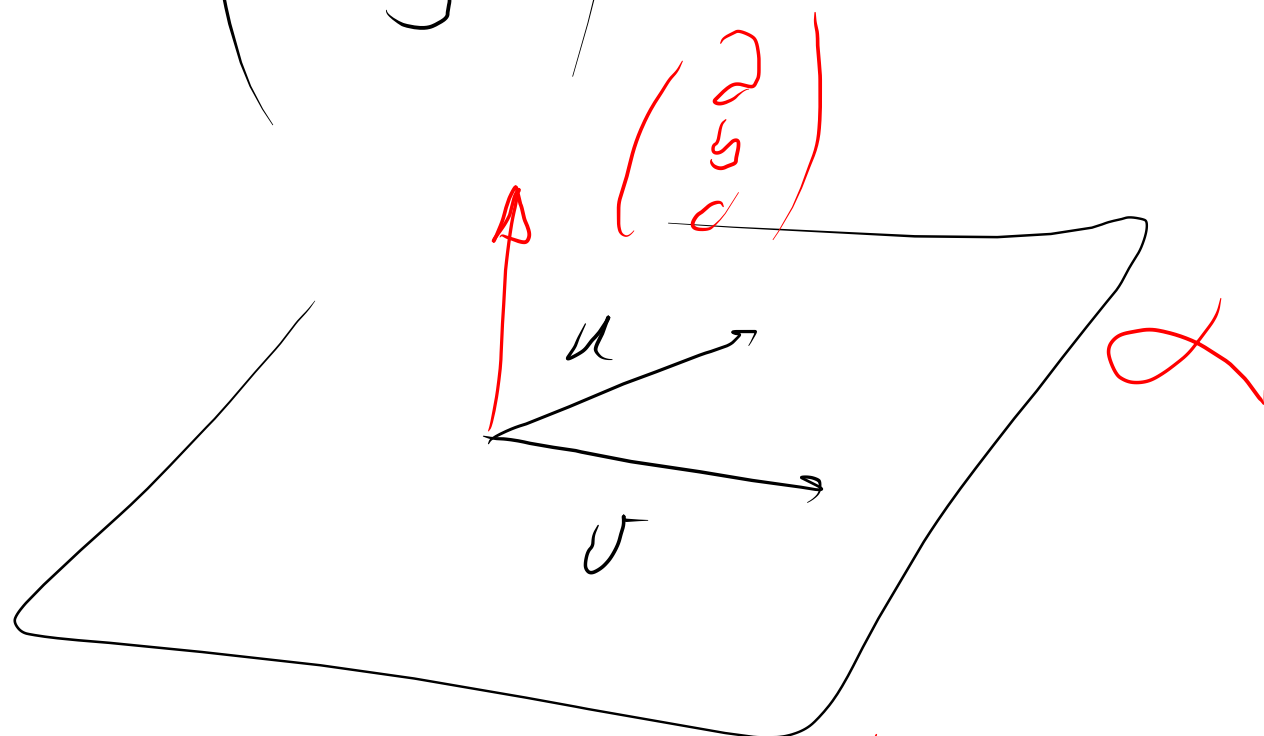


$$\Rightarrow N_{0,25} = 3$$

3.6.8 b)

$$u = \begin{pmatrix} -4 \\ -3 \\ 3 \end{pmatrix}$$

$$v = \begin{pmatrix} 8 \\ 2 \\ 6 \end{pmatrix} \sim \begin{pmatrix} 4 \\ 1 \\ 3 \end{pmatrix}$$



$u \times v$

$$\left| \begin{array}{ccc|c} i & -4 & 4 & \\ j & -3 & 1 & \\ k & 3 & 3 & \end{array} \right|$$

$$\rightarrow \begin{pmatrix} -12 \\ 24 \\ 16 \end{pmatrix} \sim \begin{pmatrix} -3 \\ 6 \\ 4 \end{pmatrix}$$

$$ax + by + cz + d = 0$$

$$-3x + 6y + 4z + d = 0$$

\checkmark par (3; 2; 1)