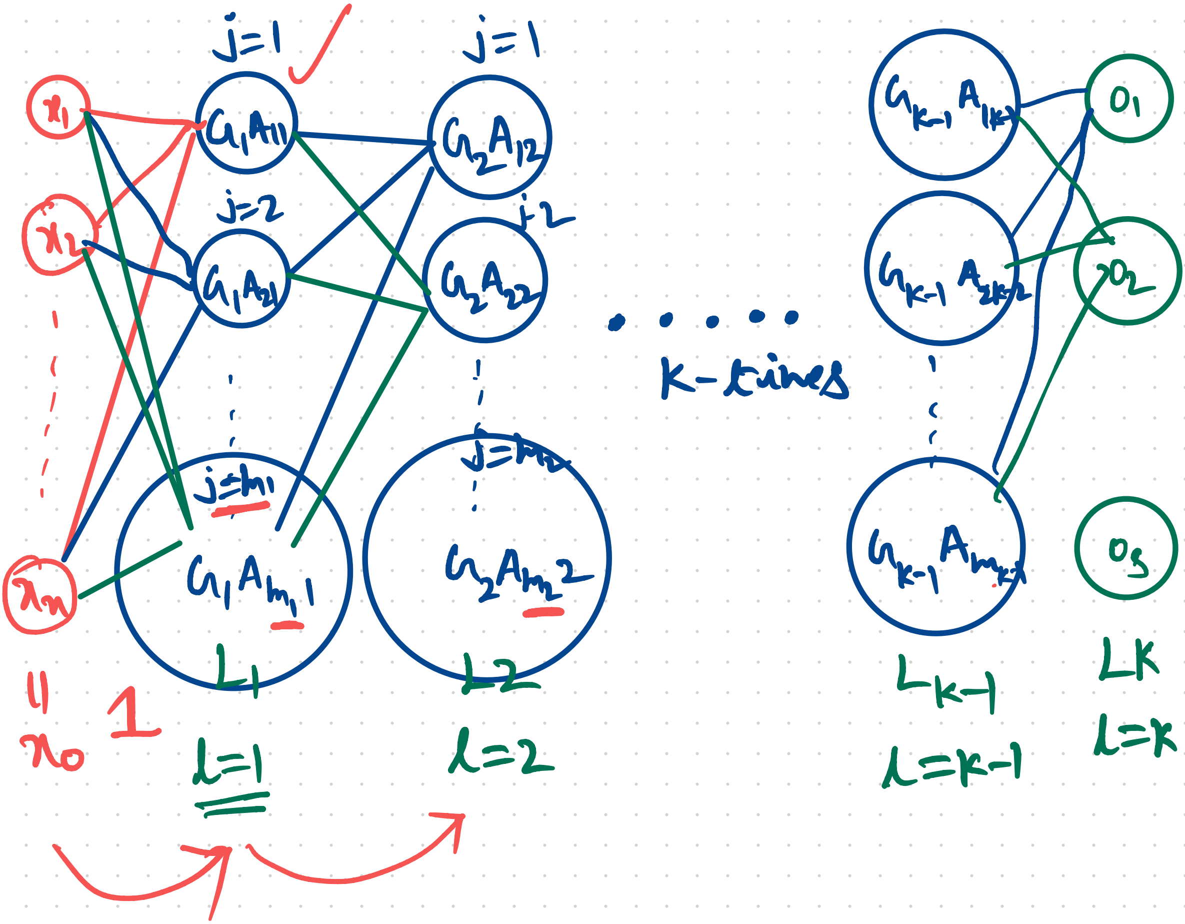
Day-4; 26 June 2023

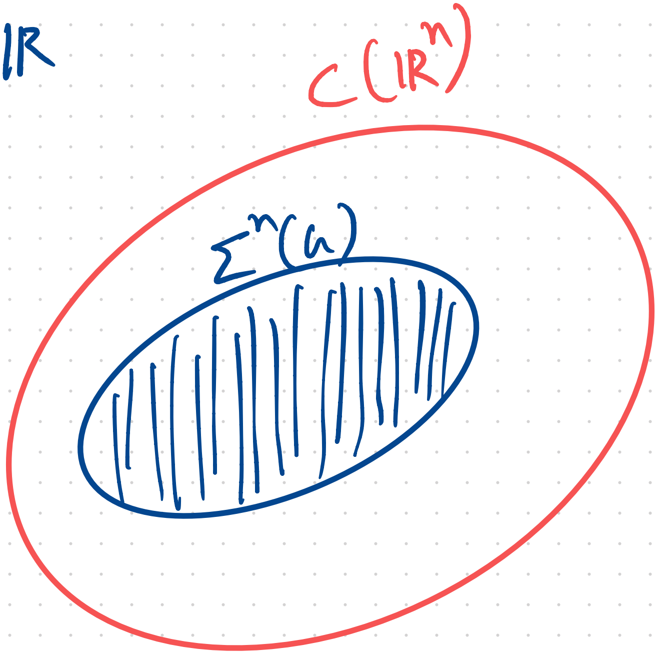
$f : \mathbb{R}^n \rightarrow \mathbb{R}^s$



β_{jl} vector size is $(l+1) \times 1$

$f: \mathbb{R}^n \longrightarrow \mathbb{R}$

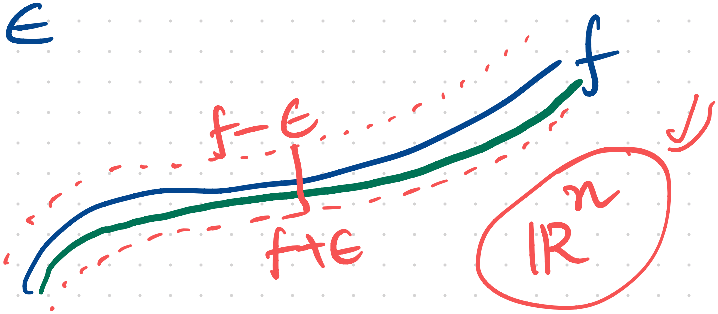
$\Sigma^n(a)$



$\Sigma^n(a) \subset C(\mathbb{R}^n)$

"$\forall \epsilon > 0, \ \forall f \in C(\mathbb{R}^n), \ \exists g \in \underline{\Sigma^n(a)}$

$\ni \|f - g\| < \epsilon$"



$\Sigma^n(a)$ is "uniformly dense on compacta" in $C(\mathbb{R}^n)$ if $\forall K$ (compact) $\subset \mathbb{R}^n$, $\Sigma^n(a)$ is dense in $C(\mathbb{R}^n)$.

"A sequence $\{f_n\} \longrightarrow f$ "uniformly on compacta" if $\forall K \subset \mathbb{R}^n$,

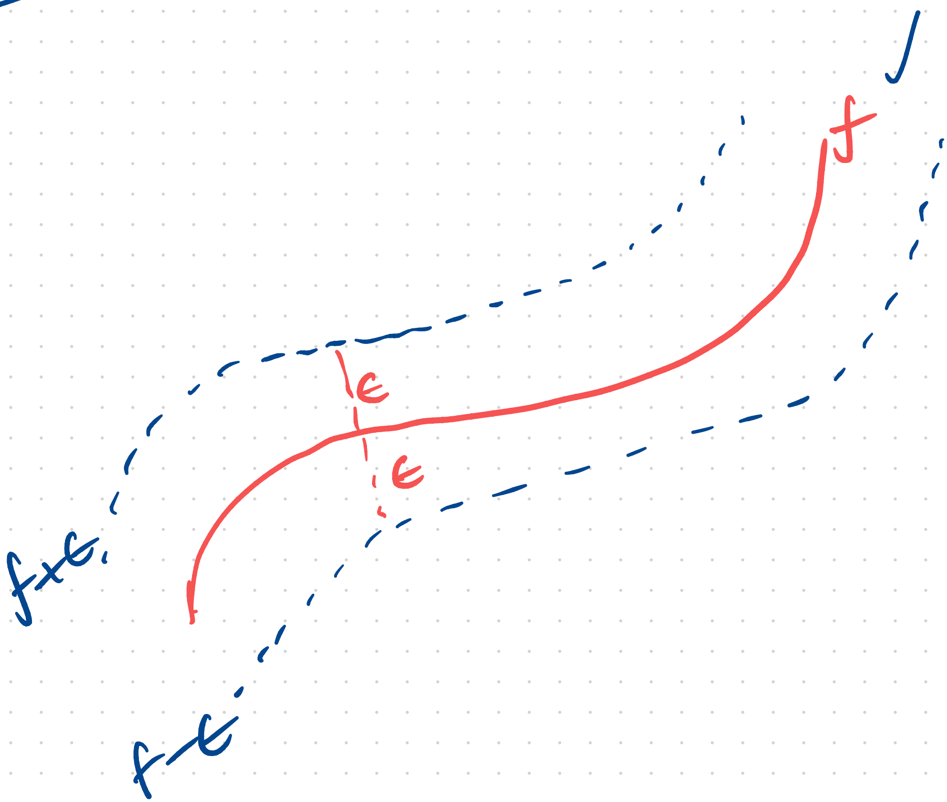
$$|f_n - f| \longrightarrow 0 \text{ as } n \longrightarrow \infty".$$

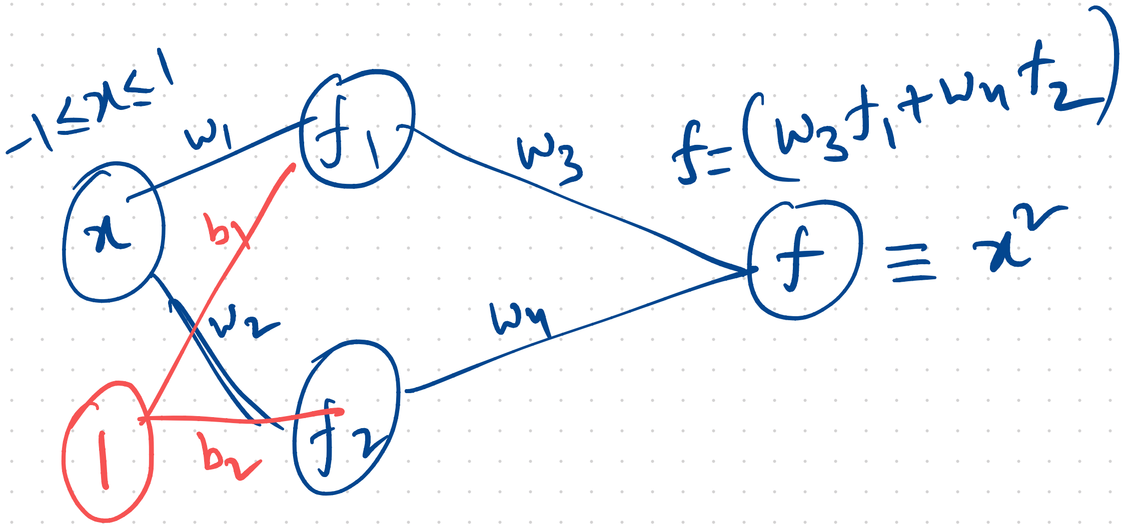
$$\begin{array}{ccccc} Y & Y & N & & N \\ \bar{x}_1, & \bar{x}_2, & \bar{x}_3 & \cdots & \bar{x}_K \in \mathbb{R}^n \\ \downarrow & \downarrow & & & \downarrow \\ f_1 & f_2 & & & f_K \in \underline{\underline{\Sigma^n(a)}} \end{array}$$

$$\boxed{f : \mathbb{R}^n \to \{0, 1\}} \quad \begin{array}{l} Y - 1 \\ N - 0 \end{array}$$

$$f(\bar{x}) = \begin{cases} Y \\ N \end{cases}$$

$$\boxed{\{f_i\} \longrightarrow f}$$





-1 ≤ x ≤ 1
x
1
w1
w2
b1
b2
f1
f2
w3
w4
f
f = (w3 f1 + w4 f2)
≡ x^2