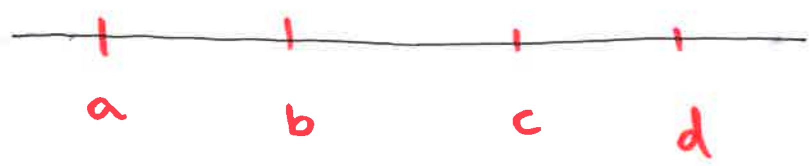
Reflexiones sobre el Teorema de la proyección sobre un convexo cerrado.

1) 

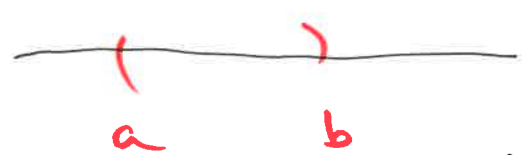
$K = [a,b] \cup [c,d]$: No convexo, cerrado.

$\forall x \geq d \quad P_K x = d \qquad \forall x \in [c,d] \cup [a,b] \quad P_K x = x$

$\forall x \in [b, \frac{b+c}{2}] \quad P_K x = b \qquad$ si $x = \frac{b+c}{2}$

$\forall x \in [\frac{b+c}{2}, c] \quad P_K x = c \qquad P_K x = \{b, c\}$

$\forall x \leq a \quad P_K x = a.$

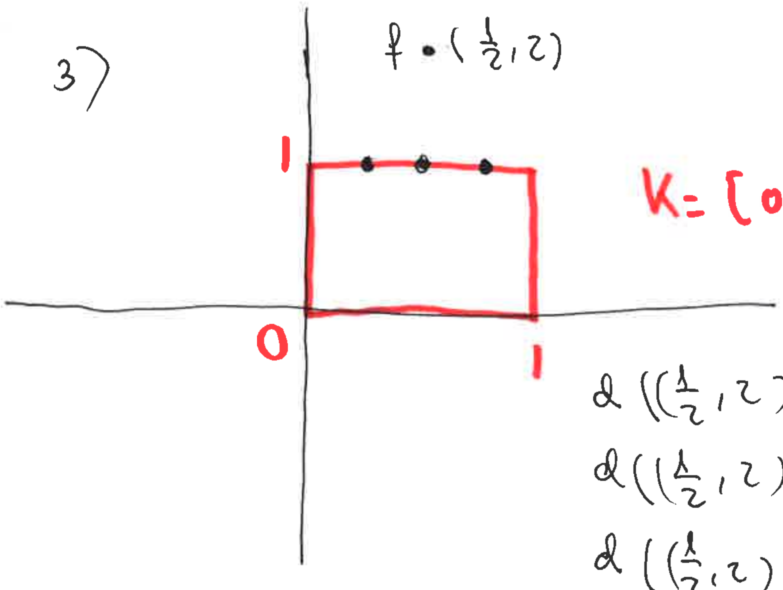
2) 

No existe, necesariamente la mejor aproximación

si $x \geq b \quad \nexists P_K x$

si $x \leq a \quad \nexists P_K x$

si $x \in (a,b) \quad P_K x = x$

3) 

$\mathbb{R}^2$, $x = (x_1, x_2)$

$\|x\|_\infty = \text{máx}\{|x_1|, |x_2|\}.$

$K = [0,1] \times [0,1]$ cerrado, convexo

$\mathbb{R}^2$ no Hilbert con $\|\cdot\|_\infty$

$d(f, K) = 1$

$d((\frac{1}{2}, 2), (\frac{1}{2}, 1)) = 1$

$d((\frac{1}{2}, 2), (\frac{3}{4}, 1)) = \text{máx}\{\frac{1}{4}, 1\} = 1$

$d((\frac{1}{2}, 2), (x, 1)) = \text{máx}\{|\frac{1}{2} - x|, |1|\} = 1, \ \forall x \in [0,1]$