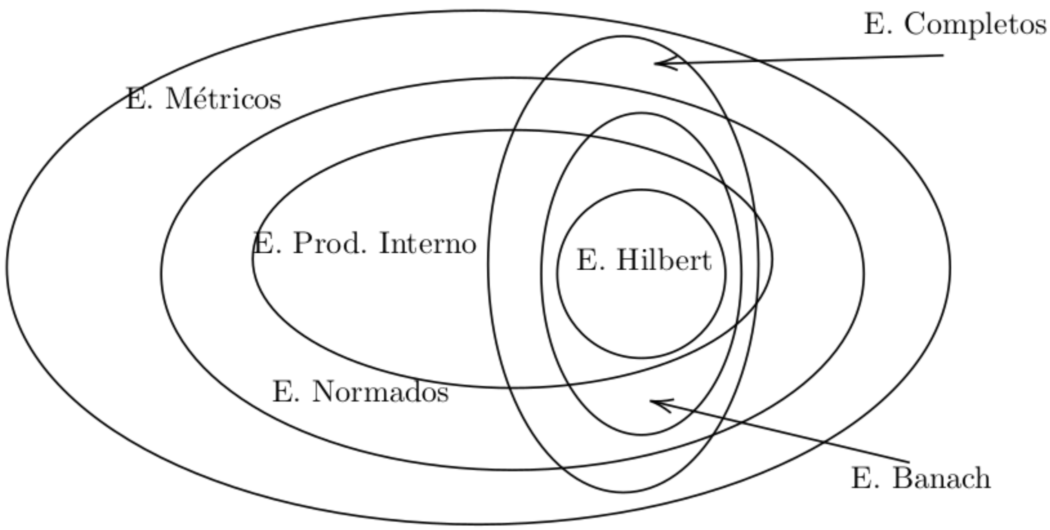
TALLER 1



Independencia Lineal:

$\hookrightarrow \{v_1, \dots, v_n\}$

$$\vec{0} = a_1 v_1 + \dots + a_n v_n$$

$$a_i = 0$$

$\boxed{\text{Span}}$

Base: span{L.I.}

ortonormal

Proceso de ort. gram-Schmidt

Vector normal: $\boxed{e_i} = v_i / \|v_i\|$

$$\langle e_i, e_j \rangle = \delta_{ij}$$

$$e_2 = \frac{v_2 - \langle v_2, e_1 \rangle e_1}{\|v_2 - \langle v_2, e_1 \rangle e_1\|}$$

$\vdots$

$$e_i = \frac{v_i - \langle v_i, e_1 \rangle e_1 - \dots - \langle v_i, e_{i-1} \rangle e_{i-1}}{\| \qquad \qquad \|}$$

$$x = \sum_{i=1}^{n} c_i e_i$$

$\boxed{c_i = \langle e_i, x \rangle}$

coef. de fourier.

Dem:

$$x = a_1 e_1 + \dots + a_n e_n$$

$$\langle x, e_1\rangle = a_1\langle e_1, e_1\rangle + \underbrace{a_2\langle e_1, e_2\rangle + \cdots + a_n\langle e_1, e_n\rangle}_{=0}$$

$$a_1 = \langle x, e_1\rangle \quad 1$$

$$a_i = \langle x, e_i\rangle$$

$\square$

$$\langle v, w\rangle \rightarrow \langle v + w, u\rangle \quad \text{sesquilineal}$$

$$= \langle v, u\rangle + \langle w, u\rangle$$

$$\text{Espacios lineales} \xrightarrow[\text{P.I.}]{\text{def}} \text{Espacio euclídeo.}$$