Espacio de Hilbert separable ($\mathcal{H}$)	Boreliano (B) Func. peso $\omega(x)$	Conjunto lin. indep. a ortonormalizar en $L^2(B)$	Base ortonormal $\{e_n^\omega\}_{n=0}^\infty$ numerable en $L^2_\omega(B)$	Relación de ortonormalización en $L^2_\omega(B)$ $\int_B e_n^{\omega *}(x)e_m^\omega(x)\omega(x)dx = \delta_{nm}$	Base ortonormal $\{e_n\}_{n=0}^\infty$ en $L^2(B)$ $\int_B e_n^*(x)e_m(x)dx = \delta_{nm}$
$\mathcal{H} = L^2[-1,1]$	$B = [-1,1]$	$\{x^n\}_{n=0}^\infty \subset \mathcal{H}$	$e_n^\omega = \sqrt{n+1/2}P_n(x)$	$\int_{-1}^1 P_n(x)P_m(x)dx = \frac{2}{2n+1}\delta_{n,m}$	$e_n(x) = \sqrt{n+1/2}P_n(x)$
	$\omega(x) = 1$		$P_n(x) \equiv$ polinomio de Legendre	$P_0(x) = 1, \quad (n+1)P_{n+1}(x) = (2n+1)xP_n(x) - nP_{n-1}(x), \quad n \geq 1$	
			$P_n(x) = \frac{(-1)^n}{n!2^n}\frac{d^n}{dx^n}(1-x^2)^n$	$P_n(-x) = (-1)^n P_n(x), \quad (1-x^2)\frac{d^2P_n(x)}{dx} - 2x\frac{dP_n(x)}{dx} + n(n+1)P_n(x) = 0$	
$\mathcal{H} = L^2[0,\infty]$	$B = [0,\infty]$	$\{x^n e^{-x/2}\}_{n=0}^\infty \subset \mathcal{H}$	$e_n^\omega = L_n(x)$	$\int_0^\infty e^{-x}L_n(x)L_m(x)dx = \delta_{n,m}$	$e_n(x) = e^{-x/2}L_n(x)$
	$\omega(x) = e^{-x}$		$L_n(x) \equiv$ polinomio de Laguerre	$L_0 = 1, \quad (n+1)L_{n+1}(x) = (2n+1-x)L_n(x) - nL_{n-1}(x), \quad n \geq 1$	
			$L_n(x) = \frac{1}{n!}e^x\frac{d^n}{dx^n}(e^{-x}x^n)$	$x\frac{d^2L_n(x)}{dx^2} + (1-x)\frac{dL_n(x)}{dx} + nL_n(x) = 0$	
$\mathcal{H} = L^2(\mathbb{R})$	$B = \mathbb{R}$	$\{x^n e^{-x^2/2}\}_{n=0}^\infty \subset \mathcal{H}$	$e_n^\omega = \frac{1}{(n!2^n\sqrt{\pi})^{1/2}}H_n(x)$	$\int_{-\infty}^{+\infty} e^{-x^2}H_n(x)H_m(x)dx = \sqrt{\pi}2^n n!\delta_{n,m}$	$e_n(x) = \frac{e^{-x^2/2}}{(n!2^n\sqrt{\pi})^{1/2}}H_n(x)$
	$\omega(x) = e^{-x^2}$		$H_n(x) \equiv$ polinomio de Hermite	$H_0(x) = 1, \quad H_{n+1}(x) = 2xH_n(x) - 2nH_{n-1}(x), \quad n \geq 1$	
			$H_n(x) = (-1)^n e^{x^2}\frac{d^n}{dx^n}e^{-x^2}$	$H_n(x) = (-1)^n H_n(-x), \quad \frac{d^2H_n(x)}{dx^2} - 2x\frac{dH_n(x)}{dx} + 2nH_n(x) = 0$	
$\mathcal{H} = L^2([a,b])$	$B = [a,b]$	$\{e_n^{(1)}\}_{n=-\infty}^{+\infty} = \{\frac{1}{\sqrt{b-a}}e^{i\frac{2\pi n}{b-a}x}\}_{n=-\infty}^{+\infty}$		$\{e_n^{(2)}\}_{n=0}^\infty = \{\frac{1}{\sqrt{b-a}}, \quad \sqrt{\frac{2}{b-a}}\cos\frac{2\pi kx}{b-a}, \quad \sqrt{\frac{2}{b-a}}\sin\frac{2\pi kx}{b-a}\}_{k=1}^{+\infty}$	
$b - a = 2\pi$	$\omega(x) = 1$	$\{e_n^{(1)}\}_{n=-\infty}^{+\infty} = \{\frac{1}{\sqrt{2\pi}}e^{inx}\}_{n=-\infty}^{+\infty}$		$\{e_n^{(2)}\}_{n=0}^\infty = \{\frac{1}{\sqrt{2\pi}}, \quad \sqrt{\frac{1}{\pi}}\cos kx, \quad \sqrt{\frac{1}{\pi}}\sin kx\}_{k=1}^{+\infty}$	

Convergencia en norma $\forall f \in \mathcal{H} : f = \sum_n \langle e_n, f\rangle\, e_n \Leftrightarrow lim_{n\to\infty}||f - \sum_{n=0}^m \langle e_n, f\rangle\, e_n|| = 0 \Leftrightarrow \forall\epsilon > 0 \quad \exists m \in N : \int_B |f(x) - \sum_{n=0}^{m(\epsilon)}\langle e_n, f\rangle\, e_n|^2 dx < \epsilon^2$ con $\{e_n\}_{n=0}^\infty \equiv$ b.o.n. de $\mathcal{H}$

$\mathcal{H} = L^2(B) \quad \Rightarrow \quad \int_B |f(x)|^2 dx = ||f||^2 = \sum_n |\langle e_n, f\rangle|^2$ con $\langle e_n, f\rangle = \int_B e_n^*(x)f(x)dx$

$f = g\,\omega^{1/2} \in L^2(B) \Leftrightarrow g = f\,\omega^{-1/2} \in L^2_\omega(B)$

TABLA 1 (general)