FORMULÁRIO - 17/05/2007

ERRO QUADRÁTICO

$$EQ(f,g) = \|f-h\| = \sqrt{\langle\, f-g \mid f-g \,\rangle}$$

POLINÔMIOS ORTOGONAIS MÔNICOS - FÓRMULAS DE RECORRÊNCIA

$$p_{-1}(x)=0, \quad p_0(x)=1, \quad p_k(x)=(x-\alpha_k)p_{k-1}(x)-\beta_k p_{k-2}(x), \quad k=1,2,\ldots$$

$$\text{onde} \quad \alpha_k = \frac{\langle\, xp_{k-1} \mid p_{k-1} \,\rangle}{\langle\, p_{k-1} \mid p_{k-1} \,\rangle} \quad \beta_k = \frac{\langle\, xp_{k-1} \mid p_{k-2} \,\rangle}{\langle\, p_{k-2} \mid p_{k-2} \,\rangle} \quad (\beta_1 = 0)$$

ANÁLISE HARMÔNICA PARA f DE PERÍODO $2L$

$$g(x) = a_0 + \sum_{k=1}^{m}\left[a_k \cos\left(k\tfrac{\pi}{L}x\right) + b_k \sin\left(k\tfrac{\pi}{L}x\right)\right] \quad \text{onde}$$

Caso Contínuo: f integrável em $[a, a+2L]$	Caso Discreto: f tabelada em $x_j = a + j\frac{\pi}{L},\ j=1,\ldots,2N$
$a_0 = \frac{1}{2L}\int_{-L}^{L} f(x)dx = \frac{1}{2L}\int_{a}^{a+2L} f(x)dx$ $a_k = \frac{1}{L}\int_{-L}^{L} f(x)\cos\left(k\frac{\pi}{L}x\right)dx = \frac{1}{L}\int_{a}^{a+2L} f(x)\cos\left(k\frac{\pi}{L}x\right)dx$ $b_k = \frac{1}{L}\int_{-L}^{L} f(x)\sin\left(k\frac{\pi}{L}x\right)dx = \frac{1}{L}\int_{a}^{a+2L} f(x)\sin\left(k\frac{\pi}{L}x\right)dx$ $k=1,2,\ldots,m$	$a_0 = \frac{1}{2N}\sum_{j=1}^{2N} f(x_j)$ $a_k = \frac{1}{N}\sum_{j=1}^{N} f(x_j)\cos(kx_j)$ $b_k = \frac{1}{N}\sum_{j=1}^{N} f(x_j)\sin(kx_j)$ $k=1,2,\ldots,N$

POLINÔMIOS DE LEGENDRE

$$p_0(x)=1, \quad p_1(x)=x, \quad p_2(x)=\frac{1}{2}(3x^2-1), \quad p_3(x)=\frac{1}{2}(5x^3-3x),\ldots$$

$$\text{satisfazem} \quad \int_{-1}^{1} p_i(x)p_j(x)dx = \begin{cases} 0, & \text{se } i \neq j \\ \frac{2}{2i+1}, & \text{se } i=j \end{cases}$$