

Jak znaleźć układ wielomianów ortogonalnych

$$\phi_0(x) \equiv 1, \quad \phi_1(x) = x - B_1, \quad \forall x \in [a, b],$$

gdzie

$$B_1 = \frac{\int_a^b xw(x)[\phi_0(x)]^2 dx}{\int_a^b w(x)[\phi_0(x)]^2 dx},$$

$$k \geq 2,$$

$$\phi_k(x) = (x - B_k)\phi_{k-1}(x) - C_k\phi_{k-2}(x), \quad \forall x \in [a, b],$$

gdzie

$$B_k = \frac{\int_a^b xw(x)[\phi_{k-1}(x)]^2 dx}{\int_a^b w(x)[\phi_{k-1}(x)]^2 dx}$$

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$$C_k = \frac{\int_a^b xw(x)\phi_{k-1}(x)\phi_{k-2}(x) dx}{\int_a^b w(x)[\phi_{k-2}(x)]^2 dx}.$$

(Procedure Gram-Schmidt)