Np. Wielomiany Legendre'a

$w(x) = 1$, $[a,b] = [-1,1]$

$L_0(x) = 1$;

$B_1 = \dfrac{\int_{-1}^{1} x\,dx}{\int_{-1}^{1} dx} = 0$ $\Rightarrow$ $L_1(x) = (x - B_1)L_0(x)$
$$= x \,;$$

$B_2 = \dfrac{\int_{-1}^{1} x^3\,dx}{\int_{-1}^{1} x^2\,dx} = 0$, $C_2 = \dfrac{\int_{-1}^{1} x^2\,dx}{\int_{-1}^{1} dx} = \dfrac{1}{3}$

$L_2(x) = (x - B_2)L_1(x) - C_2 L_0(x) = x^2 - \dfrac{1}{3}$,

$L_3(x) = x^3 - \dfrac{3}{5}x$, $L_4(x) = x^4 - \dfrac{6}{7}x^2 + \dfrac{3}{35}$

$L_5(x) = x^5 - \dfrac{10}{9}x^3 + \dfrac{5}{21}x$

$P \Longleftrightarrow L$