

Coefficients for the Jacobi Polynomials $P_n^{(\alpha, \beta)}(x) = a_n^{-1} \sum_{m=0}^n c_m (x-1)^m$

Table 22.1

	a_n	$(x-1)^0$	$(x-1)^1$	$(x-1)^2$	$(x-1)^3$	$(x-1)^4$	$(x-1)^5$	$(x-1)^6$
$P_0^{(\alpha, \beta)}$	1	1						
$P_1^{(\alpha, \beta)}$	2	$2(\alpha+1)$	$\alpha+\beta+2$					
$P_2^{(\alpha, \beta)}$	8	$4(\alpha+1)_2$	$4(\alpha+\beta+3)(\alpha+2)$	$(\alpha+\beta+3)_2$				
$P_3^{(\alpha, \beta)}$	48	$8(\alpha+1)_3$	$12(\alpha+\beta+4)(\alpha+2)_2$	$6(\alpha+\beta+4)_2(\alpha+3)$	$(\alpha+\beta+4)_3$			
$P_4^{(\alpha, \beta)}$	384	$16(\alpha+1)_4$	$32(\alpha+\beta+5)(\alpha+2)_3$	$24(\alpha+\beta+5)_2(\alpha+3)_2$	$8(\alpha+\beta+5)_3(\alpha+4)$	$(\alpha+\beta+5)_4$		
$P_5^{(\alpha, \beta)}$	3840	$32(\alpha+1)_5$	$80(\alpha+\beta+6)(\alpha+2)_4$	$80(\alpha+\beta+6)_2(\alpha+3)_3$	$40(\alpha+\beta+6)_3(\alpha+4)_2$	$10(\alpha+\beta+6)_4(\alpha+5)$	$(\alpha+\beta+6)_5$	
$P_6^{(\alpha, \beta)}$	46080	$64(\alpha+1)_6$	$192(\alpha+\beta+7)(\alpha+2)_5$	$240(\alpha+\beta+7)_2(\alpha+3)_4$	$160(\alpha+\beta+7)_3(\alpha+4)_3$	$60(\alpha+\beta+7)_4(\alpha+5)_2$	$12(\alpha+\beta+7)_5(\alpha+6)$	$(\alpha+\beta+7)_6$

$$(m)_n = m(m+1)(m+2) \dots (m+n-1)$$

$$P_5^{(1,1)}(x) = \frac{1}{3840} [(8)_5(x-1)^5 + 10(8)_4(6)(x-1)^4 + 40(8)_3(5)_2(x-1)^3 + 80(8)_2(4)_3(x-1)^2 + 80(8)(3)_4(x-1) + 32(2)_5]$$

$$P_6^{(1,1)}(x) = \frac{1}{3840} [95040(x-1)^6 + 475200(x-1)^5 + 864000(x-1)^4 + 691200(x-1)^3 + 230400(x-1)^2 + 23040]$$