

LAGRANGIAN INTEGRATION COEFFICIENTS

Table 25.3

$$\int_{x_m}^{x_{m+1}} f(x) dx \approx h \sum_k A_k(m) f(x_k) \quad *$$

$$DA_k^n(m)$$

$n = \text{odd}$

n	$m \setminus k$	-4	-3	-2	-1	0	1	2	3	4	D	
3	-1				5	8	-1				0	12
5	-2			251	646	-264	106	-19			1	720
	-1			-19	346	456	-74	11			0	
7	-3		19087	65112	-46461	37504	-20211	6312	-863		2	60480
	-2		-863	25128	46989	-16256	7299	-2088	271		1	
	-1		271	-2760	30819	37504	-6771	1608	-191		0	
9	-4	1070017	4467094	-4604594	5595358	-5033120	3146338	-1291214	312874	-33953	3	3628800
	-3	-33953	1375594	3244786	-1752542	1317280	-755042	294286	-68906	7297	2	
	-2	7297	-99626	1638286	2631838	-833120	397858	-142094	31594	-3233	1	
	-1	-3233	36394	-216014	1909858	2224480	-425762	126286	-25706	2497	0	
		4	3	2	1	0	-1	-2	-3	-4	$k \setminus m$	

$n = \text{even}$

n	$m \setminus k$	-4	-3	-2	-1	0	1	2	3	4	5	D	
4	-1				9	19	-5	1				1	24
	0				-1	13	13	-1				0	
6	-2			475	1427	-798	482	-173	27			2	1440
	-1			-27	637	1022	-258	77	-11			1	
	0			11	-93	802	802	-93	11			0	
8	-3		36799	139849	-121797	123133	-88547	41499	-11351	1375		3	120960
	-2		-1375	47799	101349	-44797	26883	-11547	2999	-351		2	
	-1		351	-4183	57627	81693	-20227	7227	-1719	191		1	
	0		-191	1879	-9531	68323	68323	-9531	1879	-191		0	
10	-4	2082753	9449717	-11271304	16002320	-17283646	13510082	-7394032	2687864	-583435	57281	4	7257600
	-3	-57281	2655563	6872072	-4397584	3973310	-2848834	1481072	-520312	110219	-10625	3	
	-2	10625	-163531	3133688	5597072	-2166334	1295810	-617584	206072	-42187	3969	2	
	-1	-3969	50315	-342136	3609968	4763582	-1166146	462320	-141304	27467	-2497	1	
	0	2497	-28939	162680	-641776	4134338	4134338	-641776	162680	-28939	2497	0	
		5	4	3	2	1	0	-1	-2	-3	-4	$k \setminus m$	

Compiled from National Bureau of Standards, Tables of Lagrangian interpolation coefficients. Columbia Univ. Press, New York, N.Y., 1944 (with permission).

*See page 11.