

Table157_Calculating ExpandingFractals

Expanding the Exponential Power of 2 (Butterfly Fractal) base, starting with n=0 and listing the respective running Sums (Σ) by Calculation					
p	x increases as: 4·x	y increases as: 4·x + 3	z increases as: 4·x + 3	xz=PN increases as: 16PN + 12x	Calculate 16PN +12x=PN _{next}
2	2	1	3	6	
3	4	3	7	28	496
5	16	15	31	496	8128
7	64	63	127	8128	130816
9	256	255	511	130816	2096128
11	1024	1023	2047	2096128	33550336
13	4096	4095	8191	33550336	536854528
15	16384	16383	32767	536854528	8589869056
17	65536	65535	131071	8589869056	137438691328
19	262144	262143	524287	137438691328	2199022206976
21	1048576	1048575	2097151	2199022206976	35184367894528
23	4194304	4194303	8388607	35184367894528	562949936644096
25	16777216	16777215	33554431	562949936644096	9007199187632130
27	67108864	67108863	134217727	9007199187632130	144115187807420000
29	268435456	268435455	536870911	144115187807420000	2305843008139950000
31	1073741824	1073741823	2147483647	2305843008139950000	36893488143124100000
33	4294967296	4294967295	8589934591	36893488143124100000	590295810341525000000
35	17179869184	17179869183	34359738367	590295810341526000000	9444732965670570000000
37	68719476736	68719476735	137438953471	9444732965670570000000	151115727451554000000000
39	274877906944	274877906943	549755813887	151115727451554000000000	2417851639228160000000000
41	1099511627776	1099511627775	2199023255551	2417851639228160000000000	38685626227663800000000000
43	4398046511104	4398046511103	8796093022207	38685626227663700000000000	618970019642672000000000000
45	17592186044416	17592186044415	35184372088831	618970019642673000000000000	9903520314282980000000000000
47	70368744177664	70368744177663	140737488355327	9903520314282970000000000000	15845632502852800000000000000
49	281474976710656	281474976710655	562949953421311	15845632502852800000000000000	253530120045645000000000000000
51	1125899906842624	1125899906842620	2251799813685240	253530120045645000000000000000	4056481920730320000000000000000
53	4503599627370496	4503599627370500	9007199254741000	4056481920730340000000000000000	64903710731685400000000000000000
55	18014398509481984	18014398509482000	36028797018964000	64903710731685400000000000000000	1038459371706970000000000000000000
57	72057594037927936	72057594037927900	144115188075856000	1038459371706970000000000000000000	1661534994731150000000000000000000
59	288230376151711744	288230376151712000	576460752303424000	1661534994731150000000000000000000	2658455991569840000000000000000000
61	1152921504606846976	1152921504606850000	2305843009213700000	2658455991569840000000000000000000	425352958651174000000000000000000000

Table 157 16PN+4(3x)=PN_n=16PN+12x. As only x=4·previous x, the number of “containers” of the Exponential Power of 2 (BF1) is reduced by 1/2, e.i. in going from p=7, where x=64 to p=13, where x=4096, there are actually 6 “container” steps if x is simply doubled, but when x is quadrupled, it divides that 6 into 3 steps — 130816-2096128- 33550336 — the latter being the next TRUE, active PN. Next x, y and z can also be calculated.
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13	4096	4095	8191	33550336	536854528
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17	65536	65535	131071	8589869056	137438691328
19	262144	262143	524287	137438691328	2199022206976
21	1048576	1048575	2097151	2199022206976	35184367894528
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25	16777216	16777215	33554431	562949936644096	9007199187632128
27	67108864	67108863	134217727	9007199187632128	144115187807420416
29	268435456	268435455	536870911	144115187807420416	2305843008139952128
31	1073741824	1073741823	2147483647	2305843008139952128	36893488143124100000
33	4294967296	4294967295	8589934591	36893488143124100000	590295810341525000000
35	17179869184	17179869183	34359738367	590295810341526000000	9444732965670570000000
37	68719476736	68719476735	137438953471	9444732965670570000000	151115727451554000000000
39	274877906944	274877906943	549755813887	151115727451554000000000	2417851639228160000000000
41	1099511627776	1099511627775	2199023255551	2417851639228160000000000	38685626227663800000000000
43	4398046511104	4398046511103	8796093022207	38685626227663700000000000	618970019642672000000000000
45	17592186044416	17592186044415	35184372088831	618970019642673000000000000	9903520314282980000000000000
47	70368744177664	70368744177663	140737488355327	9903520314282970000000000000	15845632502852800000000000000
49	281474976710656	281474976710655	562949953421311	15845632502852800000000000000	253530120045645000000000000000
51	1125899906842624	1125899906842623	2251799813685250	253530120045646000000000000000	4056481920730340000000000000000
53	4503599627370496	4503599627370495	9007199254740990	4056481920730330000000000000000	6490371073168530000000000000000
55	18014398509481984	18014398509481983	36028797018964000	6490371073168540000000000000000	103845937170697000000000000000000
57	72057594037927936	72057594037927935	144115188075856000	103845937170697000000000000000000	166153499473115000000000000000000
59	288230376151711744	288230376151711743	576460752303423000	1661534994731140000000000000000000	2658455991569831744654692615953842176
61	1152921504606846976	1152921504606846975	2305843009213693951	2658455991569831744654692615953842176	42535295865117300000000000000000000
63	4611686018427387904	4611686018427390000	9223372036854780000	42535295865117300000000000000000000	680564733841877000000000000000000000
65	18446744073709551616	18446744073709600000	36893488147419200000	6805647338418790000000000000000000000	10889035741470100000000000000000000000
67	73786976294838206464	73786976294838200000	14757395258967600000	10889035741470000000000000000000000000	1742245718635200000000000000000000000
69	295147905179352825856	295147905179353000000	59029581035870600000	17422457186352100000000000000000000000	2787593149816340000000000000000000000
71	1180591620717411303424	1180591620717410000000	36118324143482000000	27875931498163200000000000000000000000	44601490397061100000000000000000000000
73	4722366482869645213696	4722366482869650000000	14473296573930000000	44601490397061300000000000000000000000	71362384635298100000000000000000000000
75	18889465931478580854784	1888946593147860000000	77893186295720000000	71362384635298100000000000000000000000	11417981541647700000000000000000000000
77	75557863725914323419136	7555786372591430000000	11572745182900000000	11417981541647700000000000000000000000	18268770466636300000000000000000000000
79	302231454903657293676544	30223145490365700000000	46290980731400000000	18268770466636300000000000000000000000	29230032746618100000000000000000000000
81	1208925819614629174706176	120892581961463000000000	35163922926000000000	29230032746618100000000000000000000000	46768052394589000000000000000000000000
83	4835703278458516698824704	483570327845852000000000	40655691704000000000	46768052394588900000000000000000000000	74828883831342200000000000000000000000
85	1.93428131138341E+25	1.93428131138341E+25	3.86856262276682E+25	7.48288838313425E+50	1.19726214130148E+52
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