

Fifty first-order non-consecutive prime generating polynomials with sequence distances superior to five

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Abstract: This paper discusses the mathematical Number Theory field of first order Prime-Generating Polynomials (P-GP) also referenced as Arithmetic progressions (AP). In regards to the Green-Tao theorem, it emphasizes “the primes contain arbitrarily long polynomial progressions” by exploring specifically the primorial $p_{29\#}$ co-linear space.

Keywords: Primes, Polynomials, Progressions, Primorial, $p_{29\#}$, $p_{30\#}$

JEL Classifications Numbers: C00, C02, C60, C63, C65, C67, C69.

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1 Introduction

This paper focuses exclusively on first order non-consecutive prime-generating algebraic rational integer-coefficient polynomials for consecutive algebraic rational integer value sequences.

They are also expressed as Arithmetic progression (AP) and were found with P29# co-linearity computer program CPAP30 with distances ranging from 6 to 14, whereas previous known efforts such as computer program Prime Grid explored P23# co-linearity with record distance of $d=27$ ¹.

CPAP30 partly optimizes run-time candidacy detection through Adleman–Pomerance–Rumely-Cohen-Lenstra (APR-CL) deterministic primality test.

Polynomial n° 1

A-number (provisional): A337141

CPU01 distance=14 [0;13] $P(n)=6469693230*n+2203780981$ (1*P29#*n+2203780981)
data: 2203780981, 8673474211, 15143167441, 21612860671, 28082553901,
34552247131, 41021940361, 47491633591, 53961326821, 60431020051,
66900713281, 73370406511, 79840099741, 86309792971

Polynomial n° 2

A-number (provisional): A337142

CPU01 distance=13 [0;12] $P(n)=6469693230*n+1113771629$ (1*P29#*n+1113771629)
data: 1113771629, 7583464859, 14053158089, 20522851319, 26992544549,
33462237779, 39931931009, 46401624239, 52871317469, 59341010699,
65810703929, 72280397159, 78750090389

Polynomial n° 3

A-number (provisional): A337143

CPU01 distance=12 [0;11] $P(n)=6469693230*n+67901107$ (1*P29#*n+67901107)
data: 67901107, 6537594337, 13007287567, 19476980797, 25946674027,
32416367257, 38886060487, 45355753717, 51825446947, 58295140177,
64764833407, 71234526637

Polynomial n° 4

A-number (provisional): A337144

CPU01 distance=11 [0;10] $P(n)=6469693230*n+31284889$ (1*P29#*n+31284889)
data: 31284889, 6500978119, 12970671349, 19440364579, 25910057809,
32379751039, 38849444269, 45319137499, 51788830729, 58258523959,
64728217189

¹ cf. R. Gahan & PrimeGrid, et al <https://www.primegrid.com/download/AP27-81292139.pdf> September 2019

Polynomial n° 5

A-number (provisional): A337145

CPU01 distance=10 [0;9] $P(n)=6469693230*n+640943 (1*P29\#*n+640943)$

data: 640943, 6470334173, 12940027403, 19409720633, 25879413863, 32349107093, 38818800323, 45288493553, 51758186783, 58227880013

Polynomial n° 6

A-number (provisional): A337146

CPU01 distance=8 [0;7] $P(n)=6469693230*n+274139 (1*P29\#*n+274139)$

data: 274139, 6469967369, 12939660599, 19409353829, 25879047059, 32348740289, 38818433519, 45288126749

Polynomial n° 7

A-number (provisional): A337147

CPU01 distance=7 [0;6] $P(n)=6469693230*n+21503 (1*P29\#*n+21503)$

data: 21503, 6469714733, 12939407963, 19409101193, 25878794423, 32348487653, 38818180883

Polynomial n° 8

A-number (provisional): A337148

CPU01 distance=6 [0;5] $P(n)=6469693230*n+983 (1*P29\#*n+983)$

data: 983, 6469694213, 12939387443, 19409080673, 25878773903, 32348467133

Polynomial n° 9

A-number (provisional): A337149

CPU02 distance=10 [0;9] $P(n)=539141106813128820*n+1149843713 (83333334*P29\#*n+1149843713)$

data: 1149843713, 539141107962972533, 1078282214776101353, 1617423321589230173, 2156564428402358993, 2695705535215487813, 3234846642028616633, 3773987748841745453, 4313128855654874273, 4852269962468003093

Polynomial n° 10

A-number (provisional): A337150

CPU02 distance=9 [0;8] $P(n)=539141106813128820*n+103841033 (83333334*P29\#*n+103841033)$

data: 103841033, 539141106916969853, 1078282213730098673, 1617423320543227493, 2156564427356356313, 2695705534169485133, 3234846640982613953, 3773987747795742773, 4313128854608871593

Polynomial n° 11

A-number (provisional): A337151

CPU02 distance=8 [0;7] $P(n)=539141106813128820 \cdot n+93581$

(83333334*P29#*n+93581)

data: 93581, 539141106813222401, 1078282213626351221, 1617423320439480041, 2156564427252608861, 2695705534065737681, 3234846640878866501, 3773987747691995321

Polynomial n° 12

A-number (provisional): A337152

CPU02 distance=6 [0;5] $P(n)=539141106813128820 \cdot n+72679$

(83333334*P29#*n+72679)

data: 72679, 539141106813201499, 1078282213626330319, 1617423320439459139, 2156564427252587959, 2695705534065716779

Polynomial n° 13

A-number (provisional): A337153

CPU03 distance=10 [0;9] $P(n)=1078282207156564410 \cdot n+2587921559$

(166666667*P29#*n+2587921559)

data: 2587921559, 1078282209744485969, 2156564416901050379, 3234846624057614789, 4313128831214179199, 5391411038370743609, 6469693245527308019, 7547975452683872429, 8626257659840436839, 9704539866997001249

Polynomial n° 14

A-number (provisional): A337154

CPU03 distance=9 [0;8] $P(n)=1078282207156564410 \cdot n+34964777$

(166666667*P29#*n+34964777)

data: 34964777, 1078282207191529187, 2156564414348093597, 3234846621504658007, 4313128828661222417, 5391411035817786827, 6469693242974351237, 7547975450130915647, 8626257657287480057

Polynomial n° 15

A-number (provisional): A337155

CPU03 distance=8 [0;7] $P(n)=1078282207156564410 \cdot n+8252033$

(166666667*P29#*n+8252033)

data: 8252033, 1078282207164816443, 2156564414321380853, 3234846621477945263, 4313128828634509673, 5391411035791074083, 6469693242947638493, 7547975450104202903

Polynomial n° 16

A-number (provisional): A337156

CPU03 distance=7 [0;6] $P(n)=1078282207156564410*n+5635337$

($166666667*P29\#*n+5635337$)

data: 5635337, 1078282207162199747, 2156564414318764157,
3234846621475328567, 4313128828631892977, 5391411035788457387,
6469693242945021797

Polynomial n° 17

A-number (provisional): A337157

CPU03 distance=6 [0;5] $P(n)=1078282207156564410*n+663349$

($166666667*P29\#*n+663349$)

data: 663349, 1078282207157227759, 2156564414313792169,
3234846621470356579, 4313128828626920989, 5391411035783485399

Polynomial n° 18

A-number (provisional): A337158

CPU04 distance=9 [0;8] $P(n)=1617423307500000000*n+238097023$

($250000000*P29\#*n+238097023$)

data: 238097023, 1617423307738097023, 3234846615238097023,
4852269922738097023, 6469693230238097023, 8087116537738097023,
9704539845238097023, 11321963152738097023, 12939386460238097023

Polynomial n° 19

A-number (provisional): A337159

CPU04 distance=8 [0;7] $P(n)=1617423307500000000*n+29447023$

($250000000*P29\#*n+29447023$)

data: 29447023, 1617423307529447023, 3234846615029447023,
4852269922529447023, 6469693230029447023, 8087116537529447023,
9704539845029447023, 11321963152529447023

Polynomial n° 20

A-number (provisional): A337160

CPU04 distance=7 [0;6] $P(n)=1617423307500000000*n+88223$

($250000000*P29\#*n+88223$)

data: 88223, 1617423307500088223, 3234846615000088223, 4852269922500088223,
6469693230000088223, 8087116537500088223, 9704539845000088223

Polynomial n° 21

A-number (provisional): A337161

CPU05 distance=10 [0;9] $P(n)=2156564407843435590*n+227850373$

($333333333*P29\#*n+227850373$)

data: 227850373, 2156564408071285963, 4313128815914721553,
6469693223758157143, 8626257631601592733, 10782822039445028323,
12939386447288463913, 15095950855131899503, 17252515262975335093,
19409079670818770683

Polynomial n° 22

A-number (provisional): A337162

CPU05 distance=8 [0;7] $P(n)=2156564407843435590*n+832081$
(333333333*P29#*n+832081)

data: 832081, 2156564407844267671, 4313128815687703261,
6469693223531138851, 8626257631374574441, 10782822039218010031,
12939386447061445621, 15095950854904881211

Polynomial n° 23

A-number (provisional): A337163

CPU05 distance=6 [0;5] $P(n)=2156564407843435590*n+363829$
(333333333*P29#*n+363829)

data: 363829, 2156564407843799419, 4313128815687235009,
6469693223530670599, 8626257631374106189, 10782822039217541779

Polynomial n° 24

A-number (provisional): A337164

CPU06 distance=8 [0;7] $P(n)=2695705508186871180*n+9022441$
(416666666*P29#*n+9022441)

data: 9022441, 2695705508195893621, 5391411016382764801,
8087116524569635981, 10782822032756507161, 13478527540943378341,
16174233049130249521, 18869938557317120701

Polynomial n° 25

A-number (provisional): A337165

CPU06 distance=7 [0;6] $P(n)=2695705508186871180*n+855863$
(416666666*P29#*n+855863)

data: 855863, 2695705508187727043, 5391411016374598223,
8087116524561469403, 10782822032748340583, 13478527540935211763,
16174233049122082943

Polynomial n° 26

A-number (provisional): A337166

CPU06 distance=6 [0;5] $P(n)=2695705508186871180*n+31769$
(416666666*P29#*n+31769)

data: 31769, 2695705508186902949, 5391411016373774129, 8087116524560645309,
10782822032747516489, 13478527540934387669

Polynomial n° 27

A-number (provisional): A337167

CPU07 distance=9 [0;8] $P(n)=3234846608530306770*n+217144691$
(499999999*P29#*n+217144691)

data: 217144691, 3234846608747451461, 6469693217277758231,
9704539825808065001, 12939386434338371771, 16174233042868678541,
19409079651398985311, 22643926259929292081, 25878772868459598851

Polynomial n° 28

A-number (provisional): A337168

CPU07 distance=8 [0;7] $P(n)=3234846608530306770*n+5609231$

($499999999*P29\#*n+5609231$)

data: 5609231, 3234846608535916001, 6469693217066222771,
9704539825596529541, 12939386434126836311, 16174233042657143081,
19409079651187449851, 22643926259717756621

Polynomial n° 29

A-number (provisional): A337169

CPU07 distance=7 [0;6] $P(n)=3234846608530306770*n+3061133$

($499999999*P29\#*n+3061133$)

data: 3061133, 3234846608533367903, 6469693217063674673,
9704539825593981443, 12939386434124288213, 16174233042654594983,
19409079651184901753

Polynomial n° 30

A-number (provisional): A337170

CPU07 distance=6 [0;5] $P(n)=3234846608530306770*n+123323$

($499999999*P29\#*n+123323$)

data: 123323, 3234846608530430093, 6469693217060736863,
9704539825591043633, 12939386434121350403, 16174233042651657173

Polynomial n° 31

A-number (provisional): A337171

CPU08 distance=10 [0;9] $P(n)=3773987708873742360*n+236334277$

($583333332*P29\#*n+236334277$)

data: 236334277, 3773987709110076637, 7547975417983818997,
11321963126857561357, 15095950835731303717, 18869938544605046077,
22643926253478788437, 26417913962352530797, 30191901671226273157,
33965889380100015517

Polynomial n° 32

A-number (provisional): A337172

CPU08 distance=9 [0;8] $P(n)=3773987708873742360*n+192556823$

($583333332*P29\#*n+192556823$)

data: 192556823, 3773987709066299183, 7547975417940041543,
11321963126813783903, 15095950835687526263, 18869938544561268623,
22643926253435010983, 26417913962308753343, 30191901671182495703

Polynomial n° 33

A-number (provisional): A337173

CPU08 distance=8 [0;7] $P(n)=3773987708873742360*n+26482037$
(583333332*P29#*n+26482037)

data: 26482037, 3773987708900224397, 7547975417773966757,
11321963126647709117, 15095950835521451477, 18869938544395193837,
22643926253268936197, 26417913962142678557

Polynomial n° 34

A-number (provisional): A337174

CPU08 distance=7 [0;6] $P(n)=3773987708873742360*n+70139$
(583333332*P29#*n+70139)

data: 70139, 3773987708873812499, 7547975417747554859,
11321963126621297219, 15095950835495039579, 18869938544368781939,
22643926253242524299

Polynomial n° 35

A-number (provisional): A337175

CPU09 distance=10 [0;9] $P(n)=4313128809217177950*n+368269841$
(666666665*P29#*n+368269841)

data: 368269841, 4313128809585447791, 8626257618802625741,
12939386428019803691, 17252515237236981641, 21565644046454159591,
25878772855671337541, 30191901664888515491, 34505030474105693441,
38818159283322871391

Polynomial n° 36

A-number (provisional): A337176

CPU09 distance=9 [0;8] $P(n)=4313128809217177950*n+146063681$
(666666665*P29#*n+146063681)

data: 146063681, 4313128809363241631, 8626257618580419581,
12939386427797597531, 17252515237014775481, 21565644046231953431,
25878772855449131381, 30191901664666309331, 34505030473883487281

Polynomial n° 37

A-number (provisional): A337177

CPU09 distance=8 [0;7] $P(n)=4313128809217177950*n+36515119$
(666666665*P29#*n+36515119)

data: 36515119, 4313128809253693069, 8626257618470871019,
12939386427688048969, 17252515236905226919, 21565644046122404869,
25878772855339582819, 30191901664556760769

Polynomial n° 38

A-number (provisional): A337178

CPU09 distance=7 [0;6] $P(n)=4313128809217177950*n+357517$

(66666665*P29#*n+357517)

data: 357517, 4313128809217535467, 8626257618434713417,
12939386427651891367, 17252515236869069317, 21565644046086247267,
25878772855303425217

Polynomial n° 39

A-number (provisional): A337179

CPU10 distance=9 [0;8] $P(n)=4852269909560613540*n+41153921$

(74999998*P29#*n+41153921)

data: 41153921, 4852269909601767461, 9704539819162381001,
14556809728722994541, 19409079638283608081, 24261349547844221621,
29113619457404835161, 33965889366965448701, 38818159276526062241

Polynomial n° 40

A-number (provisional): A337180

CPU10 distance=7 [0;6] $P(n)=4852269909560613540*n+1824409$

(74999998*P29#*n+1824409)

data: 1824409, 4852269909562437949, 9704539819123051489,
14556809728683665029, 19409079638244278569, 24261349547804892109,
29113619457365505649

Polynomial n° 41

A-number (provisional): A337181

CPU10 distance=6 [0;5] $P(n)=4852269909560613540*n+872587$

(74999998*P29#*n+872587)

data: 872587, 4852269909561486127, 9704539819122099667,
14556809728682713207, 19409079638243326747, 24261349547803940287

Polynomial n° 42

A-number (provisional): A337182

CPU11 distance=10 [0;9] $P(n)=5391411009904049130*n+1793528497$

(833333331*P29#*n+1793528497)

data: 1793528497, 5391411011697577627, 10782822021601626757,
16174233031505675887, 21565644041409725017, 26957055051313774147,
32348466061217823277, 37739877071121872407, 43131288081025921537,
48522699090929970667

Polynomial n° 43

A-number (provisional): A337183

CPU11 distance=9 [0;8] $P(n)=5391411009904049130*n+15373363$

(833333331*P29#*n+15373363)

data: 15373363, 5391411009919422493, 10782822019823471623,
16174233029727520753, 21565644039631569883, 26957055049535619013,
32348466059439668143, 37739877069343717273, 43131288079247766403

Polynomial n° 44

A-number (provisional): A337184

CPU11 distance=8 [0;7] $P(n)=5391411009904049130*n+2943361$

(833333331*P29#*n+2943361)

data: 2943361, 5391411009906992491, 10782822019811041621,
16174233029715090751, 21565644039619139881, 26957055049523189011,
32348466059427238141, 37739877069331287271

Polynomial n° 45

A-number (provisional): A337185

CPU11 distance=6 [0;5] $P(n)=5391411009904049130*n+16301$

(833333331*P29#*n+16301)

data: 16301, 5391411009904065431, 10782822019808114561,
16174233029712163691, 21565644039616212821, 26957055049520261951

Polynomial n° 46

A-number (provisional): A337186

CPU12 distance=10 [0;9] $P(n)=5930552110247484720*n+393005539$

(916666664*P29#*n+393005539)

data: 393005539, 5930552110640490259, 11861104220887974979,
17791656331135459699, 23722208441382944419, 29652760551630429139,
35583312661877913859, 41513864772125398579, 47444416882372883299,
53374968992620368019

Polynomial n° 47

A-number (provisional): A337187

CPU12 distance=9 [0;8] $P(n)=5930552110247484720*n+71858219$

(916666664*P29#*n+71858219)

data: 71858219, 5930552110319342939, 11861104220566827659,
17791656330814312379, 23722208441061797099, 29652760551309281819,
35583312661556766539, 41513864771804251259, 47444416882051735979

Polynomial n° 48

A-number (provisional): A337188

CPU12 distance=8 [0;7] $P(n)=5930552110247484720*n+19582301$

(916666664*P29#*n+19582301)

data: 19582301, 5930552110267067021, 11861104220514551741,
17791656330762036461, 23722208441009521181, 29652760551257005901,
35583312661504490621, 41513864771751975341

Polynomial n° 49

A-number (provisional): A337189

CPU12 distance=7 [0;6] $P(n)=5930552110247484720*n+801571$

($916666664*P29\#*n+801571$)

data: 801571, 5930552110248286291, 11861104220495771011,
17791656330743255731, 23722208440990740451, 29652760551238225171,
35583312661485709891

Polynomial n° 50

A-number (provisional): A337190

CPU12 distance=6 [0;5] $P(n)=5930552110247484720*n+128873$

($916666664*P29\#*n+128873$)

data: 128873, 5930552110247613593, 11861104220495098313,
17791656330742583033, 23722208440990067753, 29652760551237552473

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