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

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August 20th, 2020, rev. 1

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 p29# co-linear space.

Keywords: Primes, Polynomials, Progressions, Primorial, p29#, p30#

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

OEIS Foundation Inc. (2020), The On-Line Encyclopedia of Integer Sequences, (provisional only) A337141-A337190

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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

Polynomial n° 5
A-number (provisional): A337145
CPU01 distance=10 [0;9] P(n)=6469693230*n+640943 (1*P29#*n+640943)

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

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*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*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)=10782822071565644 10*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)=10782822071565644 10*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)=10782822071565644 10*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)=10782822071565644 10*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)=10782822071565644 10*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)=269570550818687l180*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)=269570550818687l180*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)=269570550818687l180*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)=32348466085303067 70*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
(666666665*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)=48522699095606135 40*n+41153921
(749999998*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)=48522699095606135 40*n+1824409
(749999998*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)=48522699095606135 40*n+872587
(749999998*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)=59305521102474847 20*n+393005539
(916666664*P29#*n+393005539)
data: 393005539, 5930552110640490259, 11861104220887974979,
17791656331135459699, 23722208441382944419, 29652760551630429139,

3558331266187791 3, 4151386477212539 8579, 4744441688237288 3299, 5337496899262036 8019

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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