

الف $t_n = 2n^2 - 1$ $2 \times 1 - 1 = 1$ $2 \times 2^2 - 1 = 7$ $2 \times 3^2 - 1 = 17$ $2 \times 4^2 - 1 = 31$ $2 \times 5^2 - 1 = 49$

$1, 7, 17, 31, 49$ ✓

ب $t_n = \frac{4n+1}{n+2}$ $t_1 = \frac{4 \times 1 + 1}{1+2} = \frac{5}{3}$ $t_2 = \frac{4 \times 2 + 1}{2+2} = \frac{9}{4}$ $t_3 = \frac{4 \times 3 + 1}{3+2} = \frac{13}{5}$ $t_4 = \frac{4 \times 4 + 1}{4+2} = \frac{17}{6}$ $t_5 = \frac{4 \times 5 + 1}{5+2} = \frac{21}{7}$

$\frac{5}{3}, \frac{9}{4}, \frac{13}{5}, \frac{17}{6}, \frac{21}{7}$ ✓

الف $t_n = \frac{(-1)^n}{\sqrt{n+2}}$ $t_{12} = \frac{(-1)^{12}}{\sqrt{12+2}} = \frac{1}{\sqrt{14}}$ ✓

ب $t_n = 4n - \left\lfloor \frac{n}{2} \right\rfloor$ $t_{12} = 4 \times 12 - \left\lfloor \frac{12}{2} \right\rfloor = 48 - 6 = 42$ ✓

الف $t_n = 2n - 10$

$2n - 10 = 0$
 $n = 5$

$\frac{a}{- \phi +}$

$1, 2, 3, 4, 5$

✓

ب $t_n = n^2 - 12n + 20$

$1, 2, 3, 4, 5, 6, 7, 8, 9, 10$

$t_n = (n - 2)(n - 10)$

$\frac{2}{+ \phi - \phi +}$

✓

الف $t_n = 2n - 14$ $2n - 14 = 0$ $n = 7$

$1, 2, 3, 4, 5, 6, 7$

✓

ب $t_n = n^2 - 12n + 27$ $t_n = (n - 3)(n - 9)$

$\frac{3}{+ \phi - \phi +}$

$4, 5, 6, 7, 8, 9, 10, 11, 12$

✓

$d = \frac{t_m - t_n}{m - n} \Rightarrow \frac{9 - 2}{4 - 2} = \frac{7}{2} = \frac{1}{2} \Rightarrow d$

$t_4 = t_2 - d = 2 - \frac{1}{2} = \frac{3}{2} = \left\lfloor \frac{20}{2} \right\rfloor$

$d = \frac{12 - 2}{4 - 2} = 5$

$t_n = 2n - 10 \rightarrow t_5 = 0$

الف) $t_n = n^2 - 4n + 4$
 $t_1 = 1 - 4 + 4 = 1$
 $t_2 = 4 - 8 + 4 = 0$
 $t_3 = 9 - 12 + 4 = 1$
 $t_4 = 16 - 16 + 4 = 4$
 $t_5 = 25 - 20 + 4 = 9$
 $t_6 = 36 - 24 + 4 = 16$
 $t_7 = 49 - 28 + 4 = 25$
 $t_8 = 64 - 32 + 4 = 36$
 $t_9 = 81 - 36 + 4 = 49$
 $t_{10} = 100 - 40 + 4 = 64$
 $t_{11} = 121 - 44 + 4 = 81$
 $t_{12} = 144 - 48 + 4 = 100$
 $t_{13} = 169 - 52 + 4 = 121$
 $t_{14} = 196 - 56 + 4 = 144$
 $t_{15} = 225 - 60 + 4 = 169$
 $t_{16} = 256 - 64 + 4 = 196$
 $t_{17} = 289 - 68 + 4 = 225$
 $t_{18} = 324 - 72 + 4 = 256$
 $t_{19} = 361 - 76 + 4 = 289$
 $t_{20} = 400 - 80 + 4 = 324$
 $t_{21} = 441 - 84 + 4 = 361$
 $t_{22} = 484 - 88 + 4 = 400$
 $t_{23} = 529 - 92 + 4 = 441$
 $t_{24} = 576 - 96 + 4 = 484$
 $t_{25} = 625 - 100 + 4 = 529$
 $t_{26} = 676 - 104 + 4 = 576$
 $t_{27} = 729 - 108 + 4 = 625$
 $t_{28} = 784 - 112 + 4 = 676$
 $t_{29} = 841 - 116 + 4 = 729$
 $t_{30} = 900 - 120 + 4 = 784$
 $t_{31} = 961 - 124 + 4 = 841$
 $t_{32} = 1024 - 128 + 4 = 900$
 $t_{33} = 1089 - 132 + 4 = 961$
 $t_{34} = 1156 - 136 + 4 = 1024$
 $t_{35} = 1225 - 140 + 4 = 1089$
 $t_{36} = 1296 - 144 + 4 = 1156$
 $t_{37} = 1369 - 148 + 4 = 1225$
 $t_{38} = 1444 - 152 + 4 = 1296$
 $t_{39} = 1521 - 156 + 4 = 1369$
 $t_{40} = 1600 - 160 + 4 = 1444$
 $t_{41} = 1681 - 164 + 4 = 1521$
 $t_{42} = 1764 - 168 + 4 = 1600$
 $t_{43} = 1849 - 172 + 4 = 1681$
 $t_{44} = 1936 - 176 + 4 = 1764$
 $t_{45} = 2025 - 180 + 4 = 1849$
 $t_{46} = 2116 - 184 + 4 = 1936$
 $t_{47} = 2209 - 188 + 4 = 2025$
 $t_{48} = 2304 - 192 + 4 = 2116$
 $t_{49} = 2401 - 196 + 4 = 2209$
 $t_{50} = 2500 - 200 + 4 = 2304$
 $t_{51} = 2601 - 204 + 4 = 2401$
 $t_{52} = 2704 - 208 + 4 = 2500$
 $t_{53} = 2809 - 212 + 4 = 2601$
 $t_{54} = 2916 - 216 + 4 = 2704$
 $t_{55} = 3025 - 220 + 4 = 2809$
 $t_{56} = 3136 - 224 + 4 = 2916$
 $t_{57} = 3249 - 228 + 4 = 3025$
 $t_{58} = 3364 - 232 + 4 = 3136$
 $t_{59} = 3481 - 236 + 4 = 3249$
 $t_{60} = 3600 - 240 + 4 = 3364$
 $t_{61} = 3721 - 244 + 4 = 3481$
 $t_{62} = 3844 - 248 + 4 = 3600$
 $t_{63} = 3969 - 252 + 4 = 3721$
 $t_{64} = 4096 - 256 + 4 = 3844$
 $t_{65} = 4225 - 260 + 4 = 3969$
 $t_{66} = 4356 - 264 + 4 = 4096$
 $t_{67} = 4489 - 268 + 4 = 4225$
 $t_{68} = 4624 - 272 + 4 = 4356$
 $t_{69} = 4761 - 276 + 4 = 4489$
 $t_{70} = 4900 - 280 + 4 = 4624$
 $t_{71} = 5041 - 284 + 4 = 4761$
 $t_{72} = 5184 - 288 + 4 = 4900$
 $t_{73} = 5329 - 292 + 4 = 5041$
 $t_{74} = 5476 - 296 + 4 = 5184$
 $t_{75} = 5625 - 300 + 4 = 5329$
 $t_{76} = 5776 - 304 + 4 = 5476$
 $t_{77} = 5929 - 308 + 4 = 5625$
 $t_{78} = 6084 - 312 + 4 = 5776$
 $t_{79} = 6241 - 316 + 4 = 5929$
 $t_{80} = 6400 - 320 + 4 = 6084$
 $t_{81} = 6561 - 324 + 4 = 6241$
 $t_{82} = 6724 - 328 + 4 = 6400$
 $t_{83} = 6889 - 332 + 4 = 6561$
 $t_{84} = 7056 - 336 + 4 = 6724$
 $t_{85} = 7225 - 340 + 4 = 6889$
 $t_{86} = 7396 - 344 + 4 = 7056$
 $t_{87} = 7569 - 348 + 4 = 7225$
 $t_{88} = 7744 - 352 + 4 = 7396$
 $t_{89} = 7921 - 356 + 4 = 7569$
 $t_{90} = 8100 - 360 + 4 = 7744$
 $t_{91} = 8281 - 364 + 4 = 7921$
 $t_{92} = 8464 - 368 + 4 = 8100$
 $t_{93} = 8649 - 372 + 4 = 8281$
 $t_{94} = 8836 - 376 + 4 = 8464$
 $t_{95} = 9025 - 380 + 4 = 8649$
 $t_{96} = 9216 - 384 + 4 = 8836$
 $t_{97} = 9409 - 388 + 4 = 9025$
 $t_{98} = 9604 - 392 + 4 = 9216$
 $t_{99} = 9801 - 396 + 4 = 9409$
 $t_{100} = 10000 - 400 + 4 = 9604$
 $t_{101} = 10201 - 404 + 4 = 9801$
 $t_{102} = 10404 - 408 + 4 = 10000$
 $t_{103} = 10609 - 412 + 4 = 10201$
 $t_{104} = 10816 - 416 + 4 = 10404$
 $t_{105} = 11025 - 420 + 4 = 10609$
 $t_{106} = 11236 - 424 + 4 = 10816$
 $t_{107} = 11449 - 428 + 4 = 11025$
 $t_{108} = 11664 - 432 + 4 = 11236$
 $t_{109} = 11881 - 436 + 4 = 11449$
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 $t_{111} = 12321 - 444 + 4 = 11881$
 $t_{112} = 12544 - 448 + 4 = 12100$
 $t_{113} = 12769 - 452 + 4 = 12321$
 $t_{114} = 12996 - 456 + 4 = 12544$
 $t_{115} = 13225 - 460 + 4 = 12769$
 $t_{116} = 13456 - 464 + 4 = 12996$
 $t_{117} = 13689 - 468 + 4 = 13225$
 $t_{118} = 13924 - 472 + 4 = 13456$
 $t_{119} = 14161 - 476 + 4 = 13689$
 $t_{120} = 14400 - 480 + 4 = 13924$
 $t_{121} = 14641 - 484 + 4 = 14161$
 $t_{122} = 14884 - 488 + 4 = 14400$
 $t_{123} = 15129 - 492 + 4 = 14641$
 $t_{124} = 15376 - 496 + 4 = 14884$
 $t_{125} = 15625 - 500 + 4 = 15129$
 $t_{126} = 15876 - 504 + 4 = 15376$
 $t_{127} = 16129 - 508 + 4 = 15625$
 $t_{128} = 16384 - 512 + 4 = 15876$
 $t_{129} = 16641 - 516 + 4 = 16129$
 $t_{130} = 16900 - 520 + 4 = 16384$
 $t_{131} = 17161 - 524 + 4 = 16641$
 $t_{132} = 17424 - 528 + 4 = 16900$
 $t_{133} = 17689 - 532 + 4 = 17161$
 $t_{134} = 17956 - 536 + 4 = 17424$
 $t_{135} = 18225 - 540 + 4 = 17689$
 $t_{136} = 18496 - 544 + 4 = 17956$
 $t_{137} = 18769 - 548 + 4 = 18225$
 $t_{138} = 19044 - 552 + 4 = 18496$
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 $t_{140} = 19600 - 560 + 4 = 19044$
 $t_{141} = 19881 - 564 + 4 = 19321$
 $t_{142} = 20164 - 568 + 4 = 19600$
 $t_{143} = 20449 - 572 + 4 = 19881$
 $t_{144} = 20736 - 576 + 4 = 20164$
 $t_{145} = 21025 - 580 + 4 = 20449$
 $t_{146} = 21316 - 584 + 4 = 20736$
 $t_{147} = 21609 - 588 + 4 = 21025$
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 $t_{149} = 22201 - 596 + 4 = 21609$
 $t_{150} = 22500 - 600 + 4 = 21904$
 $t_{151} = 22801 - 604 + 4 = 22201$
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 $t_{174} = 30276 - 696 + 4 = 29584$
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 $t_{193} = 37249 - 772 + 4 = 36481$
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 $t_{199} = 39601 - 796 + 4 = 38809$
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 $t_{204} = 41616 - 816 + 4 = 40804$
 $t_{205} = 42025 - 820 + 4 = 41209$
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 $t_{210} = 44100 - 840 + 4 = 43264$
 $t_{211} = 44521 - 844 + 4 = 43681$
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 $t_{213} = 45369 - 852 + 4 = 44521$
 $t_{214} = 45796 - 856 + 4 = 44944$
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 $t_{216} = 46656 - 864 + 4 = 45796$
 $t_{217} = 47089 - 868 + 4 = 46225$
 $t_{218} = 47524 - 872 + 4 = 46656$
 $t_{219} = 47961 - 876 + 4 = 47089$
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 $t_{222} = 49284 - 888 + 4 = 48400$
 $t_{223} = 49729 - 892 + 4 = 48841$
 $t_{224} = 50176 - 896 + 4 = 49284$
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 $t_{228} = 51984 - 912 + 4 = 51076$
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 $t_{231} = 53361 - 924 + 4 = 52441$
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 $t_{233} = 54289 - 932 + 4 = 53361$
 $t_{234} = 54756 - 936 + 4 = 53824$
 $t_{235} = 55225 - 940 + 4 = 54289$
 $t_{236} = 55696 - 944 + 4 = 54756$
 $t_{237} = 56169 - 948 + 4 = 55225$
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 $t_{239} = 57121 - 956 + 4 = 56169$
 $t_{240} = 57600 - 960 + 4 = 56644$
 $t_{241} = 58081 - 964 + 4 = 57121$
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 $t_{243} = 59049 - 972 + 4 = 58081$
 $t_{244} = 59536 - 976 + 4 = 58564$
 $t_{245} = 60025 - 980 + 4 = 59049$
 $t_{246} = 60516 - 984 + 4 = 59536$
 $t_{247} = 61009 - 988 + 4 = 60025$
 $t_{248} = 61504 - 992 + 4 = 60516$
 $t_{249} = 62001 - 996 + 4 = 61009$
 $t_{250} = 62500 - 1000 + 4 = 61504$
 $t_{251} = 63001 - 1004 + 4 = 62001$
 $t_{252} = 63504 - 1008 + 4 = 62500$
 $t_{253} = 64009 - 1012 + 4 = 63001$
 $t_{254} = 64516 - 1016 + 4 = 63504$
 $t_{255} = 65025 - 1020 + 4 = 64009$
 $t_{256} = 65536 - 1024 + 4 = 64516$
 $t_{257} = 66049 - 1028 + 4 = 65025$
 $t_{258} = 66564 - 1032 + 4 = 65536$
 $t_{259} = 67081 - 1036 + 4 = 66049$
 $t_{260} = 67600 - 1040 + 4 = 66564$
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 $t_{262} = 68644 - 1048 + 4 = 67600$
 $t_{263} = 69169 - 1052 + 4 = 68121$
 $t_{264} = 69696 - 1056 + 4 = 68644$
 $t_{265} = 70225 - 1060 + 4 = 69169$
 $t_{266} = 70756 - 1064 + 4 = 69696$
 $t_{267} = 71289 - 1068 + 4 = 70225$
 $t_{268} = 71824 - 1072 + 4 = 70756$
 $t_{269} = 72361 - 1076 + 4 = 71289$
 $t_{270} = 72900 - 1080 + 4 = 71824$
 $t_{271} = 73441 - 1084 + 4 = 72361$
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 $t_{273} = 74529 - 1092 + 4 = 73441$
 $t_{274} = 75076 - 1096 + 4 = 73984$
 $t_{275} = 75625 - 1100 + 4 = 74529$
 $t_{276} = 76176 - 1104 + 4 = 75076$
 $t_{277} = 76729 - 1108 + 4 = 75625$
 $t_{278} = 77284 - 1112 + 4 = 76176$
 $t_{279} = 77841 - 1116 + 4 = 76729$
 $t_{280} = 78400 - 1120 + 4 = 77284$
 $t_{281} = 78961 - 1124 + 4 = 77841$
 $t_{282} = 79524 - 1128 + 4 = 78400$
 $t_{283} = 80089 - 1132 + 4 = 78961$
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 $t_{285} = 81225 - 1140 + 4 = 80089$
 $t_{286} = 81796 - 1144 + 4 = 80656$
 $t_{287} = 82369 - 1148 + 4 = 81225$
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 $t_{291} = 84681 - 1164 + 4 = 83521$
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 $t_{293} = 85849 - 1172 + 4 = 84681$
 $t_{294} = 86436 - 1176 + 4 = 85264$
 $t_{295} = 87025 - 1180 + 4 = 85849$
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 $t_{297} = 88209 - 1188 + 4 = 87025$
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 $t_{299} = 89401 - 1196 + 4 = 88209$
 $t_{300} = 90000 - 1200 + 4 = 88804$
 $t_{301} = 90601 - 1204 + 4 = 89401$
 $t_{302} = 91204 - 1208 + 4 = 90000$
 $t_{303} = 91809 - 1212 + 4 = 90601$
 $t_{304} = 92416 - 1216 + 4 = 91204$
 $t_{305} = 93025 - 1220 + 4 = 91809$
 $t_{306} = 93636 - 1224 + 4 = 92416$
 $t_{307} = 94249 - 1228 + 4 = 93025$
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 $t_{309} = 95481 - 1236 + 4 = 94249$
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 $t_{311} = 96721 - 1244 + 4 = 95481$
 $t_{312} = 97344 - 1248 + 4 = 96100$
 $t_{313} = 97969 - 1252 + 4 = 96721$
 $t_{314} = 98596 - 1256 + 4 = 97344$
 $t_{315} = 99225 - 1260 + 4 = 97969$
 $t_{316} = 99856 - 1264 + 4 = 98596$
 $t_{317} = 100489 - 1268 + 4 = 99225$
 $t_{318} = 101124 - 1272 + 4 = 99856$
 $t_{319} = 101761 - 1276 + 4 = 100489$
 $t_{320} = 102400 - 1280 + 4 = 101124$
 $t_{321} = 103041 - 1284 + 4 = 101761$
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 $t_{323} = 104329 - 1292 + 4 = 103041$
 $t_{324} = 104976 - 1296 + 4 = 103684$
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 $t_{326} = 106276 - 1304 + 4 = 104976$
 $t_{327} = 106929 - 1308 + 4 = 105625$
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 $t_{348} = 121104 - 1392 + 4 = 119716$
 $t_{349} = 121801 - 1396 + 4 = 120409$
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