

11, 5

1. $5+1, 9+3, 14+4$

تفاوت

ساختار ایدری شباهتی

$$a_n = n^2 + \frac{n(n-1)}{2} \rightarrow a_1 = 1^2 + \frac{1(1-1)}{2} = 1 \neq 5$$

1, 5, 9, 14, 21, 29, 38, 49, 61, 74, 89, 105, 122, 141, 161, 182, 205, 229, 254, 281, 309, 338, 369, 401, 435, 470, 507, 545, 585, 626, 669, 713, 759, 807, 857, 908, 961, 1015, 1071, 1129, 1189, 1251, 1315, 1381, 1449, 1519, 1591, 1665, 1741, 1819, 1900, 1983, 2069, 2157, 2247, 2339, 2433, 2529, 2627, 2727, 2829, 2933, 3039, 3147, 3257, 3369, 3483, 3599, 3717, 3837, 3959, 4083, 4209, 4337, 4467, 4599, 4733, 4869, 4997, 5127, 5259, 5393, 5529, 5667, 5807, 5949, 6093, 6239, 6387, 6537, 6689, 6843, 6999, 7157, 7317, 7479, 7643, 7809, 7977, 8147, 8319, 8493, 8669, 8847, 9027, 9209, 9393, 9579, 9767, 9957, 10149, 10343, 10539, 10737, 10937, 11139, 11343, 11549, 11757, 11967, 12179, 12393, 12609, 12827, 13047, 13269, 13493, 13719, 13947, 14177, 14409, 14643, 14879, 15117, 15357, 15599, 15843, 16089, 16337, 16587, 16839, 17093, 17349, 17607, 17867, 18129, 18393, 18659, 18927, 19197, 19469, 19743, 20019, 20297, 20577, 20859, 21143, 21429, 21717, 22007, 22299, 22593, 22889, 23187, 23487, 23789, 24093, 24399, 24707, 25017, 25329, 25643, 25959, 26277, 26597, 26919, 27243, 27569, 27897, 28227, 28559, 28893, 29229, 29567, 29907, 30249, 30593, 30939, 31287, 31637, 31989, 32343, 32699, 33057, 33417, 33779, 34143, 34509, 34877, 35247, 35619, 35993, 36369, 36747, 37127, 37509, 37893, 38279, 38667, 39057, 39449, 39843, 40239, 40637, 41037, 41439, 41843, 42249, 42657, 43067, 43479, 43893, 44309, 44727, 45147, 45569, 45993, 46419, 46847, 47277, 47709, 48143, 48579, 49017, 49457, 49899, 50343, 50789, 51237, 51687, 52139, 52593, 53049, 53507, 53967, 54429, 54893, 55359, 55827, 56297, 56769, 57243, 57719, 58197, 58677, 59159, 59643, 60129, 60617, 61107, 61599, 62093, 62589, 63087, 63587, 64089, 64593, 65099, 65607, 66117, 66629, 67143, 67659, 68177, 68697, 69219, 69743, 70269, 70797, 71327, 71859, 72393, 72929, 73467, 73997, 74529, 75063, 75599, 76137, 76677, 77219, 77763, 78309, 78857, 79407, 79959, 80513, 81069, 81627, 82187, 82749, 83313, 83879, 84447, 85017, 85589, 86163, 86739, 87317, 87897, 88479, 89063, 89649, 90237, 90827, 91419, 92013, 92609, 93207, 93807, 94409, 95013, 95619, 96227, 96837, 97449, 98063, 98679, 99297, 100000

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$$a = \frac{3}{2}$$

$$c = 0$$

$$b = -\frac{3}{2}$$

1

1

$$t_n = a n^2 + b n + c$$

$$t_1 = \frac{3}{2} + b + 0 \Rightarrow 0 = \frac{3}{2} + b$$

$$t_n = \frac{3}{2} n^2 - \frac{3}{2} n \rightarrow t_1 = \frac{3}{2} (1^2) - \frac{3}{2} \times 1 = 0$$

1, 5, 9, 14, 21, 29, 38, 49, 61, 74, 89, 105, 122, 141, 161, 182, 205, 229, 254, 281, 309, 338, 369, 401, 435, 470, 507, 545, 585, 626, 669, 713, 759, 807, 857, 908, 961, 1015, 1071, 1129, 1189, 1251, 1315, 1381, 1449, 1519, 1591, 1665, 1741, 1819, 1900, 1983, 2069, 2157, 2247, 2339, 2433, 2529, 2627, 2727, 2829, 2933, 3039, 3147, 3257, 3369, 3483, 3599, 3717, 3837, 3959, 4083, 4209, 4337, 4467, 4599, 4733, 4869, 4997, 5127, 5259, 5393, 5529, 5667, 5807, 5949, 6093, 6239, 6387, 6537, 6689, 6843, 6999, 7157, 7317, 7479, 7643, 7809, 7977, 8147, 8319, 8493, 8669, 8847, 9027, 9209, 9393, 9579, 9767, 9957, 10149, 10343, 10539, 10737, 10937, 11139, 11343, 11549, 11757, 11967, 12179, 12393, 12609, 12827, 13047, 13269, 13493, 13719, 13947, 14177, 14409, 14643, 14879, 15117, 15357, 15599, 15843, 16089, 16337, 16587, 16839, 17093, 17349, 17607, 17867, 18129, 18393, 18659, 18927, 19197, 19469, 19743, 20019, 20297, 20577, 20859, 21143, 21429, 21717, 22007, 22299, 22593, 22889, 23187, 23487, 23789, 24093, 24399, 24707, 25017, 25329, 25643, 25959, 26277, 26597, 26919, 27243, 27569, 27897, 28227, 28559, 28893, 29229, 29567, 29907, 30249, 30593, 30939, 31287, 31637, 31989, 32343, 32699, 33057, 33417, 33779, 34143, 34509, 34877, 35247, 35619, 35993, 36369, 36747, 37127, 37509, 37893, 38279, 38667, 39057, 39449, 40239, 41037, 41843, 42657, 43479, 44309, 45147, 45993, 46847, 47707, 48579, 49457, 50343, 51237, 52139, 53049, 53967, 54893, 55827, 56769, 57719, 58677, 59643, 60617, 61599, 62587, 63587, 64593, 65607, 66629, 67659, 68697, 69743, 70797, 71859, 72929, 73997, 75063, 76117, 77187, 78259, 79337, 80419, 81507, 82599, 83693, 84789, 85887, 86987, 88089, 89193, 90299, 91407, 92517, 93629, 94743, 95859, 96977, 98097, 99219, 100343, 101469, 102597, 103727, 104859, 105993, 107129, 108267, 109407, 110549, 111693, 112839, 113987, 115137, 116289, 117443, 118599, 119757, 120917, 122079, 123243, 124409, 125577, 126747, 127919, 129093, 130269, 131447, 132627, 133809, 134993, 136179, 137367, 138557, 139749, 140943, 142139, 143337, 144537, 145739, 146943, 148149, 149357, 150567, 151779, 152993, 154209, 155427, 156647, 157869, 159093, 160319, 161547, 162777, 164009, 165243, 166479, 167717, 168957, 170199, 171443, 172689, 173937, 175187, 176439, 177693, 178949, 180207, 181467, 182729, 183993, 185259, 186527, 187797, 189069, 190343, 191619, 192897, 194177, 195459, 196743, 198029, 199317, 200607, 201899, 203193, 204489, 205787, 207087, 208389, 209693, 210999, 212307, 213617, 214929, 216243, 217559, 218877, 220197, 221519, 222843, 224169, 225497, 226827, 228159, 229493, 230829, 232167, 233507, 234849, 236193, 237539, 238887, 240237, 241589, 242943, 244299, 245657, 247017, 248379, 249743, 251109, 252477, 253847, 255219, 256593, 257969, 259347, 260727, 262109, 263493, 264879, 266267, 267657, 269049, 270443, 271839, 273237, 274637, 276039, 277443, 278849, 280257, 281667, 283079, 284493, 285909, 287327, 288747, 290169, 291593, 293019, 294447, 295877, 297309, 298743, 300179, 301617, 303057, 304499, 305943, 307389, 308837, 310287, 311739, 313193, 314649, 316107, 317567, 319029, 320493, 321959, 323427, 324897, 326369, 327843, 329319, 330797, 332277, 333759, 335243, 336729, 338217, 339707, 341199, 342693, 344189, 345687, 347187, 348689, 350193, 351699, 353207, 354717, 356229, 357743, 359259, 360777, 362297, 363819, 365343, 366869, 368397, 369927, 371459, 372993, 374529, 376067, 377607, 379149, 380693, 382239, 383787, 385337, 386889, 388443, 389999, 391557, 393117, 394679, 396243, 397809, 399377, 400947, 402519, 404093, 405669, 407247, 408827, 410409, 411993, 413579, 415167, 416757, 418349, 419943, 421539, 423137, 424737, 426339, 427943, 429549, 431157, 432767, 434379, 435993, 437609, 439227, 440847, 442469, 444093, 445719, 447347, 448977, 450609, 452243, 453879, 455517, 457157, 458799, 460443, 462089, 463737, 465387, 467039, 468693, 470349, 471997, 473647, 475309, 476967, 478627, 480289, 481953, 483619, 485287, 486957, 488629, 490293, 491967, 493637, 495309, 496983, 498659, 500337, 502017, 503697, 505379, 507063, 508749, 510437, 512127, 513819, 515513, 517209, 518907, 520607, 522309, 524013, 525719, 527427, 529137, 530849, 532563, 534279, 535997, 537717, 539439, 541163, 542889, 544617, 546347, 548079, 549813, 551549, 553287, 555027, 556769, 558513, 560259, 561997, 563737, 565479, 567223, 568969, 570717, 572467, 574219, 575973, 577729, 579487, 581247, 583009, 584773, 586539, 588307, 590077, 591849, 593623, 595399, 597177, 598957, 600739, 602523, 604309, 606097, 607887, 609679, 611473, 613269, 615067, 616867, 618669, 620473, 622279, 624087, 625897, 627709, 629523, 631339, 633157, 634977, 636799, 638623, 640449, 642277, 644107, 645939, 647773, 649609, 651447, 653287, 655129, 656973, 658819, 660667, 662517, 664369, 666223, 668079, 669937, 671797, 673659, 675523, 677389, 679257, 681127, 682999, 684873, 686749, 688627, 690507, 692389, 694273, 696159, 698047, 699937, 701829, 703723, 705619, 707517, 709417, 711319, 713223, 715129, 717037, 718947, 720859, 722773, 724689, 726607, 728527, 730449, 732373, 734299, 736227, 738157, 740089, 742023, 743959, 745897, 747837, 749779, 751723, 753669, 755617, 757567, 759519, 761473, 763429, 765387, 767347, 769309, 771273, 773239, 775207, 777177, 779149, 781123, 783099, 785077, 787057, 789039, 791023, 793009, 794997, 796987, 798979, 800973, 802969, 804967, 806967, 808969, 810973, 812979, 814987, 816997, 819009, 821023, 823039, 825057, 827077, 829097, 831119, 833143, 835169, 837197, 839227, 841259, 843293, 845329, 847367, 849407, 851449, 853493, 855539, 857587, 859637, 861689, 863743, 865797, 867853, 869911, 871971, 874033, 876097, 878163, 880231, 882299, 884369, 886441, 888515, 890591, 892669, 894749, 896831, 898915, 900999, 903087, 905177, 907269, 909363, 911459, 913557, 915657, 917759, 919863, 921969, 924077, 926187, 928299, 930413, 932529, 934647, 936767, 938889, 940913, 943039, 945167, 947297, 949429, 951563, 953699, 955837, 957977, 960119, 962263, 964409, 966557, 968707, 970859, 973013, 975169, 977327, 979487, 981649, 983813, 985979, 988147, 990317, 992489, 994663, 996839, 999017, 1001197, 1003379, 1005563, 1007749, 1009937, 1012127, 1014319, 1016513, 1018709, 1020907, 1023107, 1025309, 1027513, 1029719, 1031927, 1034137, 1036349, 1038563, 1040779, 1042997, 1045217, 1047439, 1049663, 1051889, 1054117, 1056347, 1058579, 1060813, 1063049, 1065287, 1067527, 1069769, 1072013, 1074259, 1076507, 1078757, 1081009, 1083263, 1085519, 1087777, 1090037, 1092299, 1094563, 1096829, 1099097, 1101367, 1103639, 1105913, 1108189, 1110467, 1112747, 1115029, 1117313, 1119599, 1121887, 1124177, 1126469, 1128763, 1131059, 1133357, 1135657, 1137959, 1140263, 1142569, 1144877, 1147187, 1149499, 1151813, 1154129, 1156447, 1158767, 1161089, 1163413, 1165739, 1168067, 1170397, 1172729, 1175063, 1177399, 1179737, 1182077, 1184419, 1186763, 1189109, 1191447, 1193787, 1196129, 1198473, 1200817, 1203163, 1205509, 1207857, 1210207, 1212559, 1214913, 1217269, 1219627, 1221987, 1224349, 1226713, 1229079, 1231447, 1233817, 1236189, 1238563, 1240939, 1243317, 1245697, 1248079, 1250463, 1252849, 1255237, 1257627, 1260019, 1262413, 1264809, 1267207, 1269607, 1272009, 1274413, 1276819, 1279227, 1281637, 1284049, 1286463, 1288879, 1291297, 1293717, 1296139, 1298563, 1300989, 1303417, 1305847, 1308279, 1310713, 1313149, 1315587, 1318027, 1320469, 1322913, 1325359, 1327807, 1330257, 1332709, 1335163, 1337619, 1340077, 1342537, 1344997, 1347459, 1349923, 1352389, 1354857, 1357327, 1359799, 1362273, 1364749, 1367227, 1369707, 1372189, 1374673, 1377159, 1379647, 1382137, 1384629, 1387123, 1389619, 1392117, 1394617, 1397119, 1399623, 1402129, 1404637, 1407147, 1409659, 1412173, 1414689, 1417207, 1419727, 1422249, 1424773, 1427297, 1429823, 1432351, 1434881, 1437413, 1439947, 1442483, 1445021, 1447561, 1450103, 1452647, 1455193, 1457741, 1460291, 1462843, 1465397, 1467953, 1470511, 1473071, 1475633, 1478197, 1480763, 1483331, 1485901, 1488473, 1491047, 1493623, 1496201, 1498781, 1501363, 1503947, 1506533, 1509121, 1511711, 1514303, 1516897, 1519493, 1522091, 1524691, 1527293, 1529897, 1532503, 1535111, 1537721, 1540333, 1542947, 1545563, 1548181, 1550799, 1553419, 1556041, 1558665, 1561291, 1563919, 1566549, 1569181, 1571815, 1574451, 1577089, 1579729, 1582371, 1585015, 1587661, 1590309, 1592959, 1595611, 1598265, 1600921, 1603579, 1606239, 1608899, 1611561, 1614225, 1616891, 1619559, 1622229, 1624899, 1627571, 1630245, 1632921, 1635599, 1638279, 1640961, 1643645, 1646331, 1649019, 1651709, 1654399, 1657091, 1659785, 1662481, 1665179, 1667879, 1670581, 1673285, 1675991, 1678699, 1681409, 1684121, 1686835, 1689551, 1692269, 1694989, 1697711, 1700435, 1703161, 1705889, 1708619, 1711351, 1714085, 1716821, 1719559, 1722299, 1725041, 1727785, 1730531, 1733279, 1736029, 1738781, 1741535, 1744291, 1747049, 1749809, 1752571, 1755335, 1758101, 1760869, 1763639, 1766411, 1769185, 1771961, 1774739, 1777519, 1780299, 1783081, 1785865, 1788651, 1791439, 1794229, 1797021, 1799815, 1802611, 1805409, 1808209, 1811011, 1813815, 1816621, 1819429, 1822239, 1825051, 1827865, 1830681, 1833499, 1836319, 1839141, 1841965, 1844791, 1847619, 1850449, 1853281, 1856115, 1858951, 1861789, 1864629, 1867471, 1870315, 1873161, 1876009, 1878859, 1881711, 1884565, 1887421, 1890279, 1893139, 1896001, 1898865, 1901731, 1904599, 1907469, 1910341, 1913215, 1916091, 1918969, 1921849, 1924731, 1927615, 1930501, 1933389,

اعداد دنباله هر چه مقدار n بیشتر شود به صفر نزدیک می شود پس کمتر جمع می شود

$a_n = -1, -\frac{1}{2}, -\frac{1}{3}, -\frac{1}{4}, \dots$

Date

No

دنباله رو به پیشین صفر میبندی اول و دوم هستند

$$-\frac{1}{1}, \frac{1}{2}, -\frac{1}{3}, \frac{1}{4}, -\frac{1}{5}, \frac{1}{6}, -\frac{1}{7}, \frac{1}{8}, \dots$$

$$b_n = \frac{(-n)^n}{-2n} - \frac{1 \times n}{-1} = -\frac{n}{2}$$

$$k = 12$$

$$-n = -2n + 12$$

$$\frac{1}{n} = \frac{12}{n} \rightarrow h = 12$$

$$a_1, a_2$$

$$a + 9d - (a + 7d) = 12 \rightarrow 2d = 12 \rightarrow d = \frac{12}{2} = 6$$

$$a + 2d - a = 2d = 12 \rightarrow d = \frac{12}{2} = 6$$

$$a_1 = 2, a_2 = 10 \rightarrow 2, 10, 18, 26, 34, 42, 50, 58, 66, 74, 82, 90, 98, 106, 114, 122, 130, 138, 146, 154, 162, 170, 178, 186, 194, 202, 210, 218, 226, 234, 242, 250, 258, 266, 274, 282, 290, 298, 306, 314, 322, 330, 338, 346, 354, 362, 370, 378, 386, 394, 402, 410, 418, 426, 434, 442, 450, 458, 466, 474, 482, 490, 498, 506, 514, 522, 530, 538, 546, 554, 562, 570, 578, 586, 594, 602, 610, 618, 626, 634, 642, 650, 658, 666, 674, 682, 690, 698, 706, 714, 722, 730, 738, 746, 754, 762, 770, 778, 786, 794, 802, 810, 818, 826, 834, 842, 850, 858, 866, 874, 882, 890, 898, 906, 914, 922, 930, 938, 946, 954, 962, 970, 978, 986, 994, 1002$$

$$\frac{2+10}{2} = 6$$

$$b = 12n - 12$$

$$\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7}, \frac{1}{8}, \frac{1}{9}, \frac{1}{10}, \frac{1}{11}, \frac{1}{12}, \frac{1}{13}, \frac{1}{14}, \frac{1}{15}, \frac{1}{16}, \frac{1}{17}, \frac{1}{18}, \frac{1}{19}, \frac{1}{20}, \frac{1}{21}, \frac{1}{22}, \frac{1}{23}, \frac{1}{24}, \frac{1}{25}, \frac{1}{26}, \frac{1}{27}, \frac{1}{28}, \frac{1}{29}, \frac{1}{30}, \frac{1}{31}, \frac{1}{32}, \frac{1}{33}, \frac{1}{34}, \frac{1}{35}, \frac{1}{36}, \frac{1}{37}, \frac{1}{38}, \frac{1}{39}, \frac{1}{40}, \frac{1}{41}, \frac{1}{42}, \frac{1}{43}, \frac{1}{44}, \frac{1}{45}, \frac{1}{46}, \frac{1}{47}, \frac{1}{48}, \frac{1}{49}, \frac{1}{50}, \frac{1}{51}, \frac{1}{52}, \frac{1}{53}, \frac{1}{54}, \frac{1}{55}, \frac{1}{56}, \frac{1}{57}, \frac{1}{58}, \frac{1}{59}, \frac{1}{60}, \frac{1}{61}, \frac{1}{62}, \frac{1}{63}, \frac{1}{64}, \frac{1}{65}, \frac{1}{66}, \frac{1}{67}, \frac{1}{68}, \frac{1}{69}, \frac{1}{70}, \frac{1}{71}, \frac{1}{72}, \frac{1}{73}, \frac{1}{74}, \frac{1}{75}, \frac{1}{76}, \frac{1}{77}, \frac{1}{78}, \frac{1}{79}, \frac{1}{80}, \frac{1}{81}, \frac{1}{82}, \frac{1}{83}, \frac{1}{84}, \frac{1}{85}, \frac{1}{86}, \frac{1}{87}, \frac{1}{88}, \frac{1}{89}, \frac{1}{90}, \frac{1}{91}, \frac{1}{92}, \frac{1}{93}, \frac{1}{94}, \frac{1}{95}, \frac{1}{96}, \frac{1}{97}, \frac{1}{98}, \frac{1}{99}, \frac{1}{100}$$

$$\frac{1}{x} \rightarrow \frac{1}{x}$$

$$t_n = A n^r + B n$$

$$t_n = 4, 9, 9, 9, 0, \dots$$

$$A + B = 4$$

$$+r, +0, -r, -4$$

$$-r, -r, -r \rightarrow 2A = 4 \rightarrow A = -\frac{r}{2}$$

$$t_1 = 4 \rightarrow -\frac{r}{2} (1)^r + B = 4 \rightarrow B = \frac{10}{r}$$

$$r(-\frac{r}{2}) + \frac{10}{r} = -\frac{r}{2} + \frac{10}{r} = \frac{4}{r} = \frac{4}{r} \rightarrow A = -\frac{r}{2}$$

$$\frac{1}{r}, \frac{1}{r}, \frac{1}{r}, \frac{1}{r}, \frac{1}{r}, \dots$$

$$-r, -r, 0, -r, \dots$$

$$-r, -r, -r, -r, \dots$$

$$+r, +r$$

$$+r \rightarrow 2A = r \rightarrow A = \frac{r}{2}$$

$$t_n = a n^r + b n + c \rightarrow \begin{cases} t_1 = a + b + c = -4 \\ t_2 = 4a + 2b + c = -1 \end{cases} \rightarrow \begin{cases} b = -1 \\ c = -4 \end{cases} \rightarrow b n = n^r - n - 4$$

$$b n = A n + B \rightarrow \begin{cases} b_1 = 4A + B = 4 \\ b_2 = 2A + B = 2 \end{cases} \rightarrow \begin{cases} A = 1 \\ B = 0 \end{cases} \rightarrow b n = A n + B$$

$$r n^r - n - 4 = A n + B \rightarrow n^r - 4n - 4 = 0 \rightarrow n = -4 \times$$

$$\rightarrow 0, 0+1, 0+1+2, \dots, 0+1+\dots+n-1$$

$$\rightarrow 0+1+2+\dots+n-1 \rightarrow an = \frac{(n-1)(n-1+1)}{2}$$

$$\frac{n(n-1)}{2} = 55 \rightarrow n^2 - n - 110 = 0 \rightarrow (n-11)(n+10) = 0$$

$$n > 0 \rightarrow n = 11$$

تعداد مضرب های فرد
در عدد n

سوال ۲