

الف)  $t_n = 3n^2 - 1$

$3 \times 11 \rightarrow 3 \times 4 \rightarrow 3 \times 7 \rightarrow 3 \times 14$   
 $\downarrow \quad \quad \quad \downarrow \quad \quad \quad \downarrow \quad \quad \quad \downarrow$   
 $3(1) - 1 \quad 3(4) - 1 \quad 3(9) - 1 \quad 3(14) - 1$

ب)  $t_n = \frac{2n+1}{n+4}$

$\frac{2}{5} \rightarrow \frac{2}{4} \rightarrow 1 \rightarrow \frac{2}{3} \rightarrow \frac{11}{4}$   
 $\downarrow \quad \quad \quad \downarrow \quad \quad \quad \downarrow$   
 $\frac{2(1)+1}{1+4} \quad \frac{2(2)+1}{2+4} \quad \frac{2(3)+1}{3+4}$   
 $\frac{2(4)+1}{4+4} \quad \frac{2(5)+1}{5+4}$

سوال ۱)

الف)  $t_n = \frac{(-1)^n}{\sqrt{n+4}}$

$t_n = \frac{(-1)^{13}}{\sqrt{13+4}} = \frac{-1}{\sqrt{17}} = -\frac{1}{\sqrt{17}}$

$t_{13} = -\frac{1}{\sqrt{17}}$

ب)  $t_n = 2n - \left[\frac{n}{4}\right]$

$t_{13} = 2(13) - \left[\frac{13}{4}\right]$

$t_{13} = 26 - \left[3\frac{1}{4}\right] = 26 - 3 = 23$

$t_{13} = 23$

سوال ۲)

الف)  $t_n = 2n - 10$

$2n - 10 < 0$

$2n < 10$

$n < 5$

چونکه

ب)  $t_n = n^2 - 14n + 40$

$t_n = (n-4)(n-10)$

$\begin{array}{c|c} 4 & 10 \\ \hline + & - \\ \hline 0 & 0 \end{array}$

$9 - 5 + 1 = 5$

و به همین

الف)  $t_n = 2n - 14$

$2n - 14 < 0$   $2n < 14$

$n < 7$

$n < 7$

و به همین

ب)  $t_n = n^2 - 12n + 27$

$t_n = (n-3)(n-9)$

$\begin{array}{c|c} 3 & 9 \\ \hline + & - \\ \hline 0 & 0 \end{array}$

$9 - 3 + 1 = 7$

و به همین

سوال ۳)

$t_4 = 7$

$-a + 3d = 7$

$t_9 = 22$

$a + 8d = 22$

$t_3 = ?$

$ad = 1a \rightarrow d = 3$

$a + 3(3) = 7$

$a = -2$

$t_n = 3(n-1) - 2$

$t_4 = 3(4) - 2 = 10$

پ)

الف)  $an = n^2 - 4n + 2$

$$a_n = \frac{-b}{2a} = \frac{4}{2} = 2$$

$$a_2 = (2)^2 - 4(2) + 2 = 4 - 8 + 2 = -2$$

کشیب جمله  $-2$  و  $n=2$

ب)  $an = n^2 + 4n + 1$

$$a_n = \frac{-b}{2a} = \frac{-4}{2} = -2$$

$$a_1 = 1^2 + 4(1) + 1 = 6$$

میشود با این عبارت یعنی  $n=1$  منفی است پس کشیب مقدار برای نزدیکترین

کشیب جمله  $6$  و  $n=1$

$$an = -4, -12, -20, -28, -36, \dots$$

$$2a = -4 \Rightarrow a = -2$$

$$an = n^2 - 4n + 1$$

$$a_1 = -4 \Rightarrow a_1 = 1(1)^2 + b(1) + c = -4 \Rightarrow \begin{cases} -b - c = 5 \\ 2b + c = 11 \end{cases} \Rightarrow b = -4, c = 1$$

$$a_2 = -12 \Rightarrow a_2 = 1(2)^2 + b(2) + c = -12 \Rightarrow \begin{cases} -b - c = 5 \\ 2b + c = 11 \end{cases} \Rightarrow b = -4, c = 1$$

$$an = n^2 - 4n + 1 \quad 100 - 40 + 1 = 61 \quad \boxed{a_{10} = 61}$$

$$an = -4, -12, -20, -28, \dots$$

$$2a = -4 \Rightarrow a = -2$$

$$(2a^2 - an - 1)$$

$$a_1 = -4 \Rightarrow a_1 = 1(1)^2 + b(1) + c = -4 \Rightarrow \begin{cases} -b - c = 5 \\ 2b + c = 11 \end{cases} \Rightarrow b = -4, c = 1$$

$$a_2 = -12 \Rightarrow a_2 = 1(2)^2 + b(2) + c = -12 \Rightarrow \begin{cases} -b - c = 5 \\ 2b + c = 11 \end{cases} \Rightarrow b = -4, c = 1$$

$$(-\infty, a+f] \cap [ra+1, +\infty)$$

$$[a+f, ra+1]$$

مقادیر

$$ra+1 > a+f \quad \boxed{a > 2}$$

$$3, 9, 15, 21, 27, \dots \rightarrow 436$$

الف)

سوال 10

$$2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59, 62, 65, 68, 71, 74, 77, 80, 83, 86, 89, 92, 95, 98, 101, 104, 107, 110, 113, 116, 119, 122, 125, 128, 131, 134, 137, 140, 143, 146, 149, 152, 155, 158, 161, 164, 167, 170, 173, 176, 179, 182, 185, 188, 191, 194, 197, 200, 203, 206, 209, 212, 215, 218, 221, 224, 227, 230, 233, 236, 239, 242, 245, 248, 251, 254, 257, 260, 263, 266, 269, 272, 275, 278, 281, 284, 287, 290, 293, 296, 299, 302, 305, 308, 311, 314, 317, 320, 323, 326, 329, 332, 335, 338, 341, 344, 347, 350, 353, 356, 359, 362, 365, 368, 371, 374, 377, 380, 383, 386, 389, 392, 395, 398, 401, 404, 407, 410, 413, 416, 419, 422, 425, 428, 431, 434, 437, 440, 443, 446, 449, 452, 455, 458, 461, 464, 467, 470, 473, 476, 479, 482, 485, 488, 491, 494, 497, 500, 503, 506, 509, 512, 515, 518, 521, 524, 527, 530, 533, 536, 539, 542, 545, 548, 551, 554, 557, 560, 563, 566, 569, 572, 575, 578, 581, 584, 587, 590, 593, 596, 599, 602, 605, 608, 611, 614, 617, 620, 623, 626, 629, 632, 635, 638, 641, 644, 647, 650, 653, 656, 659, 662, 665, 668, 671, 674, 677, 680, 683, 686, 689, 692, 695, 698, 701, 704, 707, 710, 713, 716, 719, 722, 725, 728, 731, 734, 737, 740, 743, 746, 749, 752, 755, 758, 761, 764, 767, 770, 773, 776, 779, 782, 785, 788, 791, 794, 797, 800, 803, 806, 809, 812, 815, 818, 821, 824, 827, 830, 833, 836, 839, 842, 845, 848, 851, 854, 857, 860, 863, 866, 869, 872, 875, 878, 881, 884, 887, 890, 893, 896, 899, 902, 905, 908, 911, 914, 917, 920, 923, 926, 929, 932, 935, 938, 941, 944, 947, 950, 953, 956, 959, 962, 965, 968, 971, 974, 977, 980, 983, 986, 989, 992, 995, 998, 1001, 1004, 1007, 1010, 1013, 1016, 1019, 1022, 1025, 1028, 1031, 1034, 1037, 1040, 1043, 1046, 1049, 1052, 1055, 1058, 1061, 1064, 1067, 1070, 1073, 1076, 1079, 1082, 1085, 1088, 1091, 1094, 1097, 1100, 1103, 1106, 1109, 1112, 1115, 1118, 1121, 1124, 1127, 1130, 1133, 1136, 1139, 1142, 1145, 1148, 1151, 1154, 1157, 1160, 1163, 1166, 1169, 1172, 1175, 1178, 1181, 1184, 1187, 1190, 1193, 1196, 1199, 1202, 1205, 1208, 1211, 1214, 1217, 1220, 1223, 1226, 1229, 1232, 1235, 1238, 1241, 1244, 1247, 1250, 1253, 1256, 1259, 1262, 1265, 1268, 1271, 1274, 1277, 1280, 1283, 1286, 1289, 1292, 1295, 1298, 1301, 1304, 1307, 1310, 1313, 1316, 1319, 1322, 1325, 1328, 1331, 1334, 1337, 1340, 1343, 1346, 1349, 1352, 1355, 1358, 1361, 1364, 1367, 1370, 1373, 1376, 1379, 1382, 1385, 1388, 1391, 1394, 1397, 1400, 1403, 1406, 1409, 1412, 1415, 1418, 1421, 1424, 1427, 1430, 1433, 1436, 1439, 1442, 1445, 1448, 1451, 1454, 1457, 1460, 1463, 1466, 1469, 1472, 1475, 1478, 1481, 1484, 1487, 1490, 1493, 1496, 1499, 1502, 1505, 1508, 1511, 1514, 1517, 1520, 1523, 1526, 1529, 1532, 1535, 1538, 1541, 1544, 1547, 1550, 1553, 1556, 1559, 1562, 1565, 1568, 1571, 1574, 1577, 1580, 1583, 1586, 1589, 1592, 1595, 1598, 1601, 1604, 1607, 1610, 1613, 1616, 1619, 1622, 1625, 1628, 1631, 1634, 1637, 1640, 1643, 1646, 1649, 1652, 1655, 1658, 1661, 1664, 1667, 1670, 1673, 1676, 1679, 1682, 1685, 1688, 1691, 1694, 1697, 1700, 1703, 1706, 1709, 1712, 1715, 1718, 1721, 1724, 1727, 1730, 1733, 1736, 1739, 1742, 1745, 1748, 1751, 1754, 1757, 1760, 1763, 1766, 1769, 1772, 1775, 1778, 1781, 1784, 1787, 1790, 1793, 1796, 1799, 1802, 1805, 1808, 1811, 1814, 1817, 1820, 1823, 1826, 1829, 1832, 1835, 1838, 1841, 1844, 1847, 1850, 1853, 1856, 1859, 1862, 1865, 1868, 1871, 1874, 1877, 1880, 1883, 1886, 1889, 1892, 1895, 1898, 1901, 1904, 1907, 1910, 1913, 1916, 1919, 1922, 1925, 1928, 1931, 1934, 1937, 1940, 1943, 1946, 1949, 1952, 1955, 1958, 1961, 1964, 1967, 1970, 1973, 1976, 1979, 1982, 1985, 1988, 1991, 1994, 1997, 2000, 2003, 2006, 2009, 2012, 2015, 2018, 2021, 2024, 2027, 2030, 2033, 2036, 2039, 2042, 2045, 2048, 2051, 2054, 2057, 2060, 2063, 2066, 2069, 2072, 2075, 2078, 2081, 2084, 2087, 2090, 2093, 2096, 2099, 2102, 2105, 2108, 2111, 2114, 2117, 2120, 2123, 2126, 2129, 2132, 2135, 2138, 2141, 2144, 2147, 2150, 2153, 2156, 2159, 2162, 2165, 2168, 2171, 2174, 2177, 2180, 2183, 2186, 2189, 2192, 2195, 2198, 2201, 2204, 2207, 2210, 2213, 2216, 2219, 2222, 2225, 2228, 2231, 2234, 2237, 2240, 2243, 2246, 2249, 2252, 2255, 2258, 2261, 2264, 2267, 2270, 2273, 2276, 2279, 2282, 2285, 2288, 2291, 2294, 2297, 2300, 2303, 2306, 2309, 2312, 2315, 2318, 2321, 2324, 2327, 2330, 2333, 2336, 2339, 2342, 2345, 2348, 2351, 2354, 2357, 2360, 2363, 2366, 2369, 2372, 2375, 2378, 2381, 2384, 2387, 2390, 2393, 2396, 2399, 2402, 2405, 2408, 2411, 2414, 2417, 2420, 2423, 2426, 2429, 2432, 2435, 2438, 2441, 2444, 2447, 2450, 2453, 2456, 2459, 2462, 2465, 2468, 2471, 2474, 2477, 2480, 2483, 2486, 2489, 2492, 2495, 2498, 2501, 2504, 2507, 2510, 2513, 2516, 2519, 2522, 2525, 2528, 2531, 2534, 2537, 2540, 2543, 2546, 2549, 2552, 2555, 2558, 2561, 2564, 2567, 2570, 2573, 2576, 2579, 2582, 2585, 2588, 2591, 2594, 2597, 2600, 2603, 2606, 2609, 2612, 2615, 2618, 2621, 2624, 2627, 2630, 2633, 2636, 2639, 2642, 2645, 2648, 2651, 2654, 2657, 2660, 2663, 2666, 2669, 2672, 2675, 2678, 2681, 2684, 2687, 2690, 2693, 2696, 2699, 2702, 2705, 2708, 2711, 2714, 2717, 2720, 2723, 2726, 2729, 2732, 2735, 2738, 2741, 2744, 2747, 2750, 2753, 2756, 2759, 2762, 2765, 2768, 2771, 2774, 2777, 2780, 2783, 2786, 2789, 2792, 2795, 2798, 2801, 2804, 2807, 2810, 2813, 2816, 2819, 2822, 2825, 2828, 2831, 2834, 2837, 2840, 2843, 2846, 2849, 2852, 2855, 2858, 2861, 2864, 2867, 2870, 2873, 2876, 2879, 2882, 2885, 2888, 2891, 2894, 2897, 2900, 2903, 2906, 2909, 2912, 2915, 2918, 2921, 2924, 2927, 2930, 2933, 2936, 2939, 2942, 2945, 2948, 2951, 2954, 2957, 2960, 2963, 2966, 2969, 2972, 2975, 2978, 2981, 2984, 2987, 2990, 2993, 2996, 3000$$

$$3, 9, 15, 21, 27, \dots \rightarrow 436$$

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