

Subject:

پاسخ دلائل شماره ۱۰

مختار سلور

۲۰ آفرین به شما

سؤال ۱

{1}, {1, 2, 3, 4}, {1, 2, 3, 4, 5, 6, 7, 8, 9}, ...

$n=1$

$n=2$

$n=10$

$$t_n = 2n - 1$$

تعداد اعداد در هر مرحله

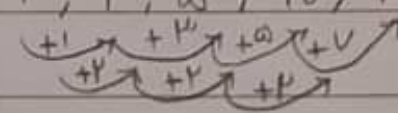


اعداد در هر مرحله

۲

تعداد اعداد در هر مرحله $n=10$ / $2 \times 9 - 1 = 17 = 17$ (تعداد اعداد در هر مرحله)

$1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, \dots$ $\Rightarrow Pa = 2 \Rightarrow a = 1$



$$Pa + b = 1 \Rightarrow a = 1 \Rightarrow b = -2$$

$$a + b + c = 1 \Rightarrow 1 - 2 + c = 1 \Rightarrow c = 2$$

$$t_n = n^2 - 2n + 2 \Rightarrow b = \frac{a+c}{2} \Rightarrow b = \frac{1+2}{2} = 1.5$$

$$a_n \in \mathbb{N} \Rightarrow Pa_1 = a_n$$

سؤال ۲

$$\Rightarrow a_1 = 1 \Rightarrow a_{10} = 10 \Rightarrow \{a_k = k \mid a_{10} = 10\}$$

$$a_{10} = 10 \Rightarrow a_{10} = 10 \Rightarrow a_{10} = 10$$

$$a_{10} = 10 \Rightarrow a_{10} = 10 \Rightarrow a_{10} = 10$$

$$P^k = n = 3k \Rightarrow n = 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63, 66, 69, 72, 75, 78, 81, 84, 87, 90, 93, 96, 99, 102, 105, 108, 111, 114, 117, 120, 123, 126, 129, 132, 135, 138, 141, 144, 147, 150, 153, 156, 159, 162, 165, 168, 171, 174, 177, 180, 183, 186, 189, 192, 195, 198, 201, 204, 207, 210, 213, 216, 219, 222, 225, 228, 231, 234, 237, 240, 243, 246, 249, 252, 255, 258, 261, 264, 267, 270, 273, 276, 279, 282, 285, 288, 291, 294, 297, 300, 303, 306, 309, 312, 315, 318, 321, 324, 327, 330, 333, 336, 339, 342, 345, 348, 351, 354, 357, 360, 363, 366, 369, 372, 375, 378, 381, 384, 387, 390, 393, 396, 399, 402, 405, 408, 411, 414, 417, 420, 423, 426, 429, 432, 435, 438, 441, 444, 447, 450, 453, 456, 459, 462, 465, 468, 471, 474, 477, 480, 483, 486, 489, 492, 495, 498, 501, 504, 507, 510, 513, 516, 519, 522, 525, 528, 531, 534, 537, 540, 543, 546, 549, 552, 555, 558, 561, 564, 567, 570, 573, 576, 579, 582, 585, 588, 591, 594, 597, 600, 603, 606, 609, 612, 615, 618, 621, 624, 627, 630, 633, 636, 639, 642, 645, 648, 651, 654, 657, 660, 663, 666, 669, 672, 675, 678, 681, 684, 687, 690, 693, 696, 699, 702, 705, 708, 711, 714, 717, 720, 723, 726, 729, 732, 735, 738, 741, 744, 747, 750, 753, 756, 759, 762, 765, 768, 771, 774, 777, 780, 783, 786, 789, 792, 795, 798, 801, 804, 807, 810, 813, 816, 819, 822, 825, 828, 831, 834, 837, 840, 843, 846, 849, 852, 855, 858, 861, 864, 867, 870, 873, 876, 879, 882, 885, 888, 891, 894, 897, 900, 903, 906, 909, 912, 915, 918, 921, 924, 927, 930, 933, 936, 939, 942, 945, 948, 951, 954, 957, 960, 963, 966, 969, 972, 975, 978, 981, 984, 987, 990, 993, 996, 999, 1002, 1005, 1008, 1011, 1014, 1017, 1020, 1023, 1026, 1029, 1032, 1035, 1038, 1041, 1044, 1047, 1050, 1053, 1056, 1059, 1062, 1065, 1068, 1071, 1074, 1077, 1080, 1083, 1086, 1089, 1092, 1095, 1098, 1101, 1104, 1107, 1110, 1113, 1116, 1119, 1122, 1125, 1128, 1131, 1134, 1137, 1140, 1143, 1146, 1149, 1152, 1155, 1158, 1161, 1164, 1167, 1170, 1173, 1176, 1179, 1182, 1185, 1188, 1191, 1194, 1197, 1200, 1203, 1206, 1209, 1212, 1215, 1218, 1221, 1224, 1227, 1230, 1233, 1236, 1239, 1242, 1245, 1248, 1251, 1254, 1257, 1260, 1263, 1266, 1269, 1272, 1275, 1278, 1281, 1284, 1287, 1290, 1293, 1296, 1299, 1302, 1305, 1308, 1311, 1314, 1317, 1320, 1323, 1326, 1329, 1332, 1335, 1338, 1341, 1344, 1347, 1350, 1353, 1356, 1359, 1362, 1365, 1368, 1371, 1374, 1377, 1380, 1383, 1386, 1389, 1392, 1395, 1398, 1401, 1404, 1407, 1410, 1413, 1416, 1419, 1422, 1425, 1428, 1431, 1434, 1437, 1440, 1443, 1446, 1449, 1452, 1455, 1458, 1461, 1464, 1467, 1470, 1473, 1476, 1479, 1482, 1485, 1488, 1491, 1494, 1497, 1500, 1503, 1506, 1509, 1512, 1515, 1518, 1521, 1524, 1527, 1530, 1533, 1536, 1539, 1542, 1545, 1548, 1551, 1554, 1557, 1560, 1563, 1566, 1569, 1572, 1575, 1578, 1581, 1584, 1587, 1590, 1593, 1596, 1599, 1602, 1605, 1608, 1611, 1614, 1617, 1620, 1623, 1626, 1629, 1632, 1635, 1638, 1641, 1644, 1647, 1650, 1653, 1656, 1659, 1662, 1665, 1668, 1671, 1674, 1677, 1680, 1683, 1686, 1689, 1692, 1695, 1698, 1701, 1704, 1707, 1710, 1713, 1716, 1719, 1722, 1725, 1728, 1731, 1734, 1737, 1740, 1743, 1746, 1749, 1752, 1755, 1758, 1761, 1764, 1767, 1770, 1773, 1776, 1779, 1782, 1785, 1788, 1791, 1794, 1797, 1800, 1803, 1806, 1809, 1812, 1815, 1818, 1821, 1824, 1827, 1830, 1833, 1836, 1839, 1842, 1845, 1848, 1851, 1854, 1857, 1860, 1863, 1866, 1869, 1872, 1875, 1878, 1881, 1884, 1887, 1890, 1893, 1896, 1899, 1902, 1905, 1908, 1911, 1914, 1917, 1920, 1923, 1926, 1929, 1932, 1935, 1938, 1941, 1944, 1947, 1950, 1953, 1956, 1959, 1962, 1965, 1968, 1971, 1974, 1977, 1980, 1983, 1986, 1989, 1992, 1995, 1998, 2001, 2004, 2007, 2010, 2013, 2016, 2019, 2022, 2025, 2028, 2031, 2034, 2037, 2040, 2043, 2046, 2049, 2052, 2055, 2058, 2061, 2064, 2067, 2070, 2073, 2076, 2079, 2082, 2085, 2088, 2091, 2094, 2097, 2100, 2103, 2106, 2109, 2112, 2115, 2118, 2121, 2124, 2127, 2130, 2133, 2136, 2139, 2142, 2145, 2148, 2151, 2154, 2157, 2160, 2163, 2166, 2169, 2172, 2175, 2178, 2181, 2184, 2187, 2190, 2193, 2196, 2199, 2202, 2205, 2208, 2211, 2214, 2217, 2220, 2223, 2226, 2229, 2232, 2235, 2238, 2241, 2244, 2247, 2250, 2253, 2256, 2259, 2262, 2265, 2268, 2271, 2274, 2277, 2280, 2283, 2286, 2289, 2292, 2295, 2298, 2301, 2304, 2307, 2310, 2313, 2316, 2319, 2322, 2325, 2328, 2331, 2334, 2337, 2340, 2343, 2346, 2349, 2352, 2355, 2358, 2361, 2364, 2367, 2370, 2373, 2376, 2379, 2382, 2385, 2388, 2391, 2394, 2397, 2400, 2403, 2406, 2409, 2412, 2415, 2418, 2421, 2424, 2427, 2430, 2433, 2436, 2439, 2442, 2445, 2448, 2451, 2454, 2457, 2460, 2463, 2466, 2469, 2472, 2475, 2478, 2481, 2484, 2487, 2490, 2493, 2496, 2499, 2502, 2505, 2508, 2511, 2514, 2517, 2520, 2523, 2526, 2529, 2532, 2535, 2538, 2541, 2544, 2547, 2550, 2553, 2556, 2559, 2562, 2565, 2568, 2571, 2574, 2577, 2580, 2583, 2586, 2589, 2592, 2595, 2598, 2601, 2604, 2607, 2610, 2613, 2616, 2619, 2622, 2625, 2628, 2631, 2634, 2637, 2640, 2643, 2646, 2649, 2652, 2655, 2658, 2661, 2664, 2667, 2670, 2673, 2676, 2679, 2682, 2685, 2688, 2691, 2694, 2697, 2700, 2703, 2706, 2709, 2712, 2715, 2718, 2721, 2724, 2727, 2730, 2733, 2736, 2739, 2742, 2745, 2748, 2751, 2754, 2757, 2760, 2763, 2766, 2769, 2772, 2775, 2778, 2781, 2784, 2787, 2790, 2793, 2796, 2799, 2802, 2805, 2808, 2811, 2814, 2817, 2820, 2823, 2826, 2829, 2832, 2835, 2838, 2841, 2844, 2847, 2850, 2853, 2856, 2859, 2862, 2865, 2868, 2871, 2874, 2877, 2880, 2883, 2886, 2889, 2892, 2895, 2898, 2901, 2904, 2907, 2910, 2913, 2916, 2919, 2922, 2925, 2928, 2931, 2934, 2937, 2940, 2943, 2946, 2949, 2952, 2955, 2958, 2961, 2964, 2967, 2970, 2973, 2976, 2979, 2982, 2985, 2988, 2991, 2994, 2997, 3000, 3003, 3006, 3009, 3012, 3015, 3018, 3021, 3024, 3027, 3030, 3033, 3036, 3039, 3042, 3045, 3048, 3051, 3054, 3057, 3060, 3063, 3066, 3069, 3072, 3075, 3078, 3081, 3084, 3087, 3090, 3093, 3096, 3099, 3102, 3105, 3108, 3111, 3114, 3117, 3120, 3123, 3126, 3129, 3132, 3135, 3138, 3141, 3144, 3147, 3150, 3153, 3156, 3159, 3162, 3165, 3168, 3171, 3174, 3177, 3180, 3183, 3186, 3189, 3192, 3195, 3198, 3201, 3204, 3207, 3210, 3213, 3216, 3219, 3222, 3225, 3228, 3231, 3234, 3237, 3240, 3243, 3246, 3249, 3252, 3255, 3258, 3261, 3264, 3267, 3270, 3273, 3276, 3279, 3282, 3285, 3288, 3291, 3294, 3297, 3300, 3303, 3306, 3309, 3312, 3315, 3318, 3321, 3324, 3327, 3330, 3333, 3336, 3339, 3342, 3345, 3348, 3351, 3354, 3357, 3360, 3363, 3366, 3369, 3372, 3375, 3378, 3381, 3384, 3387, 3390, 3393, 3396, 3399, 3402, 3405, 3408, 3411, 3414, 3417, 3420, 3423, 3426, 3429, 3432, 3435, 3438, 3441, 3444, 3447, 3450, 3453, 3456, 3459, 3462, 3465, 3468, 3471, 3474, 3477, 3480, 3483, 3486, 3489, 3492, 3495, 3498, 3501, 3504, 3507, 3510, 3513, 3516, 3519, 3522, 3525, 3528, 3531, 3534, 3537, 3540, 3543, 3546, 3549, 3552, 3555, 3558, 3561, 3564, 3567, 3570, 3573, 3576, 3579, 3582, 3585, 3588, 3591, 3594, 3597, 3600, 3603, 3606, 3609, 3612, 3615, 3618, 3621, 3624, 3627, 3630, 3633, 3636, 3639, 3642, 3645, 3648, 3651, 3654, 3657, 3660, 3663, 3666, 3669, 3672, 3675, 3678, 3681, 3684, 3687, 3690, 3693, 3696, 3699, 3702, 3705, 3708, 3711, 3714, 3717, 3720, 3723, 3726, 3729, 3732, 3735, 3738, 3741, 3744, 3747, 3750, 3753, 3756, 3759, 3762, 3765, 3768, 3771, 3774, 3777, 3780, 3783, 3786, 3789, 3792, 3795, 3798, 3801, 3804, 3807, 3810, 3813, 3816, 3819, 3822, 3825, 3828, 3831, 3834, 3837, 3840, 3843, 3846, 3849, 3852, 3855, 3858, 3861, 3864, 3867, 3870, 3873, 3876, 3879, 3882, 3885, 3888, 3891, 3894, 3897, 3900, 3903, 3906, 3909, 3912, 3915, 3918, 3921, 3924, 3927, 3930, 3933, 3936, 3939, 3942, 3945, 3948, 3951, 3954, 3957, 3960, 3963, 3966, 3969, 3972, 3975, 3978, 3981, 3984, 3987, 3990, 3993, 3996, 4000$$

سؤال ۳

$$-2k + \epsilon \Rightarrow n = 3k + 1 \Rightarrow n = 1, 4, 7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43, 46, 49, 52, 55, 58, 61, 64, 67, 70, 73, 76, 79, 82, 85, 88, 91, 94, 97, 100, 103, 106, 109, 112, 115, 118, 121, 124, 127, 130, 133, 136, 139, 142, 145, 148, 151, 154, 157, 160, 163, 166, 169, 172, 175, 178, 181, 184, 187, 190, 193, 196, 199, 202, 205, 208, 211, 214, 217, 220, 223, 226, 229, 232, 235, 238, 241, 244, 247, 250, 253, 256, 259, 262, 265, 268, 271, 274, 277, 280, 283, 286, 289, 292, 295, 298, 301, 304, 307, 310, 313, 316, 319, 322, 325, 328, 331, 334, 337, 340, 343, 346, 349, 352, 355, 358, 361, 364, 367, 370, 373, 376, 379, 382, 385, 388, 391, 394, 397, 400, 403, 406, 409, 412, 415, 418, 421, 424, 427, 430, 433, 436, 439, 442, 445, 448, 451, 454, 457, 460, 463, 466, 469, 472, 475, 478, 481, 484, 487, 490, 493, 496, 499, 502, 505, 508, 511, 514, 517, 520, 523, 526, 529, 532, 535, 538, 541, 544, 547, 550, 553, 556, 559, 562, 565, 568, 571, 574, 577, 580, 583, 586, 589, 592, 595, 598, 601, 604, 607, 610, 613, 616, 619, 622, 625, 628, 631, 634, 637, 640, 643, 646, 649, 652, 655, 658, 661, 664, 667, 670, 673, 676, 679, 682, 685, 688, 691, 694, 697, 700, 703, 706, 709, 712, 715, 718, 721, 724, 727, 730, 733, 736, 739, 742, 745, 748, 751, 754, 757, 760, 763, 766, 769, 772, 775, 778, 781, 784, 787, 790, 793, 796, 799, 802, 805, 808, 811, 814, 817, 820, 823, 826, 829, 832, 835, 838, 841, 844, 847, 850, 853, 856, 859, 862, 865, 868, 871, 874, 877, 880, 883, 886, 889, 892, 895, 898, 901, 904, 907, 910, 913, 916, 919, 922, 925, 928, 931, 934, 937, 940, 943, 946, 949, 952, 955, 958, 961, 964, 967, 970, 973, 976, 979, 982, 985, 988, 991, 994, 997, 1000$$

$$\Rightarrow 1 - 2 + 1 - 2 + \dots + (2 - 2) = -1$$

سؤال ۴

$$t_n = 14 \Rightarrow 2a + 2b + c = 14 \Rightarrow a + b + c = 7$$

$$\begin{cases} ab+c=19 \\ vb+c=17 \end{cases} \rightarrow \begin{cases} -ab-c=-19 \\ vb+c=17 \end{cases} \Rightarrow vb=1 \Rightarrow b=1 \Rightarrow c=-1$$

ادارة سؤال (15)

$$t_{10} = (10 \times 10 \times -17) + (10 \times 1) - 1 = 17$$

$$a = -17$$

$$\text{Date: } \frac{t_{10}}{t_1} = \frac{17}{17} = 1$$

$$t_1 = -17 + 1 - 1 = 17$$

$$a_1 = 10a + b = 0 \Rightarrow b = -10a \Rightarrow a_n = \frac{a(n-10)}{a(n-10)} \quad (\text{سؤال 10})$$

$$t_1 = a_1 \rightarrow a(1-10) = -10a$$

$$t_n = t_1 + d(n-1)$$

$$t_n = a_n \rightarrow a(n-10) = -10a$$

$$t_n - t_k = kd \Rightarrow -10a - (-10a) = kd$$

$$a_{10} = a(10-10) \Rightarrow a = 0a \Rightarrow \frac{a_{10}}{a} = 0 \leftarrow d = \frac{a}{2} a \in 0a = kd$$

$$4(a+d)^2 = 5(a+rd) + 13(a+d)a \Rightarrow 4a^2 + 4d^2 + 8ad = 5a + 5rd + 13a^2 + 13ad$$

$$\Rightarrow 4a^2 + 10ad + 4d^2 + 8ad \Rightarrow 0 = 9a^2 - 4d^2 + 9ad \Rightarrow$$

$$(9a-4d)(a+rd) = 0 \Rightarrow \textcircled{1} a = \frac{4d}{9} \Rightarrow \frac{a}{d} = \frac{4}{9}$$

$$\Rightarrow \textcircled{2} \frac{4d}{9} + rd = \frac{a}{d} = \frac{4}{9}$$

$$\Rightarrow \textcircled{2} \frac{-rd + 4d}{d} = 1$$

$$\frac{a}{r} = \frac{a}{r}$$

$$b = a + d$$

$$c = a + rd$$

$$\frac{(a+rd)}{r} = \frac{a}{r}$$

$$\frac{a}{r} = \frac{a}{r}$$

$$\Rightarrow \frac{-4a}{r} = d$$

$$\frac{a}{r} = r = \frac{a}{a+d} = \frac{a}{\frac{a}{r} + d} = \frac{a}{\frac{a}{r} + \frac{-4a}{r}} = \frac{a}{\frac{a-4a}{r}} = \frac{a}{\frac{-3a}{r}} = \frac{a}{-3} = -\frac{1}{3}$$

$$b = ar, c = ar^2$$

$$r(9a) = c + 13b$$

$$9a = ar^2 + 13(ar)$$

$$9 = r^2 + 13r \rightarrow r^2 + 13r - 9 = 0 \Rightarrow (r+14)(r-1) = 0 \Rightarrow r = -1$$

$$\frac{T_9}{T_4} = r^5 = (-1)^5 = -1$$

$$\frac{a_4}{(a_1)^4} + \frac{a_9}{(a_1)^9} = r \Rightarrow \frac{aq^4}{a^4q^{16}} + \frac{aq^9}{a^9q^81} = r \Rightarrow \frac{q^4}{a^4q^{16}} + \frac{q^9}{a^9q^81} = r$$

$$\Rightarrow 1a^4 - q^4 - aq = 0 \Rightarrow (1a+q)(a-q) = 0 \Rightarrow q = -1a$$

$$\Rightarrow \frac{a^4}{a^4} = 1 \Rightarrow \frac{a^4}{a^4} = \frac{a^4}{a^4} = 1$$

$$\frac{a^4}{a^4} = \frac{a^4}{a^4} = 1$$

$$aq^4 = 17$$

$$aq^4 = \sqrt{aq^{16}} \Rightarrow aq^4 = q\sqrt{aq}$$

$$aq = \sqrt{aq}$$

$$\frac{aq}{aq} = 1$$

$$\frac{1}{r} - \frac{1}{c} = \frac{1}{4}$$

$$\frac{1}{r} - \frac{1}{c} = \frac{1}{4}$$