۱

$1, 4+1, 9+3, 14, 4 \rightsquigarrow n^2 + \frac{n(n-1)}{2} = \frac{3n^2}{2} - \frac{n}{2}$

$a_{10} = \frac{3(10)^2}{2} - \frac{10}{2} = 150 - 5 = 145$

۲

$5, 3, 4 \rightsquigarrow \frac{n(n-1)}{2} = 55 \rightsquigarrow n(n-1) = 110 = 11 \times 10 \Rightarrow n = 11$

۳

جمله زوجی $\rightarrow 5, 9, 13 \rightsquigarrow 4n+1 \Rightarrow$ در شکل ۱۱ام $4(11)+1 = 45$

جمله فرد $\rightarrow 0, 4, 8 \rightsquigarrow 4n-4 \Rightarrow$ در شکل ۱۱ام $4(11)-4 = 40$

جمله زوج + فرد : $5, 12, 11, \ldots \rightsquigarrow 8n-3 \Rightarrow$ در شکل ۱۱ام $8(11)-3 = 85$

۴

$\frac{(-1)^n}{n} \rightsquigarrow a_1 = (-1)$ کوچکترین جمله ، $a_2 = \frac{(-1)^2}{2} = \frac{1}{2}$ بزرگترین جمله $\Rightarrow \frac{1}{2} - (-1) = \frac{3}{2}$

۵

$b_4 = (-3)^3 - 7(3) = -27 - 21 = (-48) \rightsquigarrow -48 = -5k + 22 \rightsquigarrow (-70 = -5k) \rightarrow k = 14$

۶

$a_{10} - a_7 = a_7 + 3d - a_7 = 3d = 12 \rightarrow d = 4 \rightsquigarrow a_4 - a_1 = a_1 + 3d - a_1 = 3d = 3(4) = 12$

۷

$t_2 = 7$ ، $t_4 = 15 \rightsquigarrow t_4 - t_2 = t_2 + 2d - t_2 = 2d = 15 - 7 = 8 \Rightarrow d = 4 \rightarrow t_2 = 7 = 4(2) + b \rightarrow b = (-1)$

$t_n = 4n - 1 \rightsquigarrow t_1 = 4(1) - 1 = 3$ ، $t_2 = 4(2) - 1 = 11 \rightsquigarrow \underset{a_1}{3}, \underset{a_2}{11}, \ldots$ $b_n = 8n - 5$

۸

$t_n = \frac{4n+2}{2n+3} \rightsquigarrow \frac{4n+2}{2n+3} < \frac{3}{2} \rightsquigarrow 8n - 4 < 6n + 9 \rightsquigarrow 2n < 13 \rightsquigarrow n < 6.5$ ۶ جمله اول

۹

$4, 9, 9, 4, 0$

$+3, +0, -3, -4$

$-3, -3, -2 \rightarrow A = \frac{-3}{2}$ ، $c = 0 \rightarrow An^2 + Bn \rightsquigarrow a_1 = \frac{-3}{2} + B = 4 \Rightarrow B = \frac{15}{2}$

$a_n = \frac{-3}{2}n^2 + \frac{15}{2}n$ $\qquad 3A + 5B = 3(\frac{-3}{2}) + 5(\frac{15}{2}) = \frac{-9}{2} + \frac{75}{2} = 33$

۱۰

$a_2 = 31$ ، $a_4 = 41 \rightsquigarrow a_4 = a_2 + 2d \Rightarrow a_4 - a_2 = a_2 + 2d - a_2 = 2d = 41 - 31 = 10 \rightsquigarrow d = 5 \rightsquigarrow$

$a_2 = 5(2) + b = 31 \rightsquigarrow b = 21 \rightsquigarrow a_n = 5n + 21$

$-4, -4, -4, -2, 0, \ldots$ $\quad a = 1 \quad c = (-4)$

$0, +2, +4$

$+2, +2$

$t_1 = 1 + b - 4 = -4 \rightsquigarrow b = (+1) \rightsquigarrow t_n = n^2 - n - 4$

$n^2 - n - 4 = 5n + 21 \rightsquigarrow n^2 - 6n - 27 = 0 \rightsquigarrow (n-9)(n+3) = 0 \rightarrow n = 9$ ✓ $\rightsquigarrow a_9 = t_9 = 45 + 21 = 66$

$n = -3$ غ ق ق