

گروه: دهم یکشنبه

سری: ۱۱

نام و نام خانوادگی: تانیا ترک تری

$$\begin{array}{c} 1, 5, 12, 22 \\ \xrightarrow{+4} \xrightarrow{+7} \xrightarrow{+10} \\ \xrightarrow{+3} \xrightarrow{+3} \end{array}$$

$$a_n = an^2 + bn + c \Rightarrow \frac{3}{4}(10)^2 + b(10) + c$$

$$2a = 3 \Rightarrow a = \frac{3}{2} \quad \frac{3}{4} \times 100 - 5 + 0 = 145 \rightarrow a_{10}$$

$$a_1 = \frac{3}{4}(1)^2 + b(1) + c = 1 \Rightarrow \frac{3}{4} + b + c = 1$$

$$a_2 = \frac{3}{4}(2)^2 + b(2) + c = 5 \Rightarrow 4 + 2b + c = 5 \Rightarrow -\frac{1}{4} + b = -4 \Rightarrow b = -\frac{15}{4} \quad c = 0$$

$$\begin{array}{c} 0, 1, 3 \\ \xrightarrow{+1} \xrightarrow{+2} \end{array}$$

$$a_n = \frac{n(n+1)}{2} \Rightarrow a_n = \frac{n(n+1)}{2} = 55 \Rightarrow n(n+1) = 110$$

$$11 \times 10 = 110$$

$$n = 10$$

$$\text{سری اول: } 5, 9, 13 \Rightarrow a_n = a_1 + (n-1)d \Rightarrow a_{11} = 5 + 10 = 15$$

$$\text{سری دوم: } 5, 13, 21 \Rightarrow a_n = a_1 + (n-1)d \Rightarrow a_{11} = 5 + 10 = 15$$

مجموع کل سه عدد سه‌گانه‌های رتبه ۱۱ ام $15 + 15 + 15 = 45$

$$a_n = \frac{(-1)^n}{n}$$

$$a_1 = -1$$

$$a_2 = 0.5$$

$$a_3 = -0.33$$

$$a_4 = 0.25$$

$$a_5 = -0.2$$

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

$$\text{اختلاف بین بزرگترین و کوچکترین جمله: } \frac{1}{2} - (-1) = \frac{3}{2} = 1.5$$

$$a_1 = -1: \text{کوچکترین جمله}$$

$$a_2 = \frac{1}{2}: \text{بزرگترین جمله}$$

$$b_n = (-3)^n - 2n \Rightarrow b_5 = (-3)^5 - 10 = -243 - 10 = -253$$

$$a_n = -2n + 22 = -24 \Rightarrow -2n = -46 \Rightarrow n = 23$$

$$k = 14$$

$$t_{10} - t_9 = 12$$

$$a_1 + 9d - (a_1 + 8d) = 12 \Rightarrow a_1 + 9d - a_1 - 8d = 12$$

$$t_9 - t_1 = ?$$

$$9d = 12 \Rightarrow d = \frac{4}{3}$$

$$t_9 - t_1 = (a_1 + 8d) - a_1 \Rightarrow a_9 - a_1 = 8d \Rightarrow 8 \times \frac{4}{3} = \frac{32}{3}$$

9

$$\begin{cases} t_7 = 5 \Rightarrow a_1 + 6d = 5 \\ t_8 = 10 \Rightarrow a_1 + 7d = 10 \end{cases}$$

$$\Rightarrow -d = -5 \Rightarrow d = 5$$

$$a_1 + 6d = 5 \Rightarrow a_1 = 5 - 6d$$

$$t_1 = 3$$

$$t_7 = 3 + 6d = 11$$

$$b_n = 3, 11$$

$$b_n = 3 + (n-1)8 \Rightarrow 3 + 8n - 8 \Rightarrow 8n - 5 = b_n$$

✓

$$t_n = \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}$$

$$\frac{a_n - r}{r n + 3} = \frac{r n - r}{r n + 3} \Rightarrow \frac{r n - r}{r n + 3} < \frac{r}{r} \Rightarrow$$

$$r(r n - r) < r(r n + 3) \Rightarrow r n - r < r n + 3 \Rightarrow r n - r n < 3 + r \Rightarrow 0 < 3 + r \Rightarrow n < \frac{1+r}{r}$$

1

$$t_n = An^2 + Bn$$

$$t_n = 4, 9, 16, 25, \dots$$

$$\begin{cases} t_1 = A + B = 4 \\ t_2 = 4A + 2B = 9 \end{cases} \Rightarrow \begin{cases} -3A - 2B = -12 \\ 4A + 2B = 9 \end{cases} \Rightarrow -3A = -21 \Rightarrow A = \frac{7}{3}$$

$$7 \left(-\frac{7}{3} \right) + 2B = 9 \Rightarrow -\frac{49}{3} + 2B = 9 \Rightarrow 2B = \frac{126}{3} \Rightarrow B = \frac{63}{3}$$

$$3A + 2B = \left(3 \times \frac{7}{3} \right) + \left(2 \times \frac{63}{3} \right) = \frac{21}{3} + \frac{252}{3} = \frac{273}{3} = 91$$

9

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

$$2a = 2 \Rightarrow a = 1$$

$$an^2 + bn + c$$

$$t_n = n^2 - n - 9$$

جدول مشترک،
جدول 9 ام است
و مقادیر آن 99 است

$$c = -1 + c = -9 \Rightarrow c = -9$$

$$\begin{cases} 1(1)^2 + b(1) + c = -9 \\ 1(2)^2 + b(2) + c = -4 \end{cases}$$

$$L_7 = 31$$

$$\Rightarrow a_1 + d = 31$$

$$L_8 = 41$$

$$\Rightarrow a_1 + 7d = 41$$

$$\Rightarrow -6d = -10 \Rightarrow d = \frac{5}{3}$$

$$a_1 + d = 31 \Rightarrow a_1 = 29$$

$$\Rightarrow \begin{cases} b + c = -9 \\ 2b + c = -10 \end{cases} \Rightarrow -b = 1 \Rightarrow b = -1$$

$$L_n = 29 + (n-1) \frac{5}{3} \Rightarrow 29 + \frac{5n-5}{3} = \frac{5n+82}{3}$$

$$\begin{aligned} n^2 - n - 9 &= 5n + 21 \Rightarrow n^2 - n - 5n - 9 - 21 = 0 \\ \Rightarrow n^2 - 6n - 30 &= 0 \Rightarrow (n-9)(n+3) = 0 \\ n &= 9 \text{ یا } -3 \quad L_9 = 5 \times 9 + 21 = 66 \end{aligned}$$

$$t_9 = (9)^2 - 9 - 9 = 66$$

10