

19, 20

① - $t_n = n^2 + \frac{n(n-1)}{2} \rightarrow t_4 = 16 + \frac{16}{2} = 24$

2

② - $t_n = \frac{n(n-1)}{2} \rightarrow t_n = \frac{n(n-1)}{2} = 66 \rightarrow n = ? \rightarrow n(n-1) = 132 \rightarrow n = 12$

2

③ - $t_n = 11n - 3, t_n = 11n - 3 = 11 \rightarrow 11n = 14 \rightarrow n = \frac{14}{11}$

1, 10

$11n + 11 = 132$

④ - $a_1 = \frac{-1}{1} = -1$
 $a_2 = \frac{1}{2} \Rightarrow a_1 = \frac{1}{2} - (-1) = \frac{3}{2}$
 $a_3 = \frac{-1}{3}$
 $a_4 = \frac{1}{4}$

2

⑤ - $b_1 = (-3)^1 - 1 \times 1 = -4$
 $a_k = -5k + 12$

1, 10

$k = 12$

⑥ - $a_1 = 12 \rightarrow a_1 + 4d = (a_1 + 4d) = 12 \rightarrow 4d = 12 \rightarrow d = 3$
 $a_9 - a_1 = 8 \rightarrow a_9 - a_1 = 8d = 8 \times 3 = 24$

2

⑦ - $\begin{cases} a_k = 15 = a + 4d \\ a_7 = 11 = a + d \end{cases}$
 $4d = 4 \rightarrow d = 1, a = 11$

2

$b_n = 11n - 5$

① - $t_n = \frac{n-1}{n+1} \rightarrow \frac{n-1}{n+1} < \frac{1}{2} \rightarrow 1n-1 < 1n+1 \rightarrow 1n < 12 \rightarrow n < 9, 6 \rightarrow$ حلته اول

الرجله عموما رتبة رتبة $t_n = an^2 + bn + c$ در نظر بگيريم:

② - $9, 9, 9, 9, \dots$
 $+9 + 2 + 0 - 3 - 9$
 $-3 -3 -3 \rightarrow a = \frac{-3}{1}, c = 0 \rightarrow t_1 = \frac{-3}{1}(1)^2 + b(1) = 9 \rightarrow b = 9 + \frac{3}{1} = \frac{15}{1}$

$\Rightarrow t_n = An^2 + Bn = \frac{-3}{1}n^2 + \frac{15}{1}n \rightarrow A = \frac{-3}{1}, B = \frac{15}{1} \left\{ \begin{array}{l} 3A + 5B = \frac{-9}{1} + \frac{15}{1} = \frac{49}{1} = 49 \end{array} \right.$

③ - $t_n = an^2 + bn + c \rightarrow a = \frac{1}{1}, c = -9 \rightarrow t_n = n^2 + bn - 9 \rightarrow t_1 = 1^2 + b(1) - 9 = -9$
 $b - 8 = -9 \rightarrow b = -1$
حلته منتم (فرضي)
 $\Rightarrow t_n = n^2 - n - 9$

$a_n = 5 \rightarrow a_1 = 11 \rightarrow d = \frac{a_2 - a_1}{2 - 1} = \frac{16}{1} = 16 \rightarrow (a_n = 16n + 11)$

$\Rightarrow n^2 - n - 9 = 16n + 11 \rightarrow n^2 - n - 16n - 20 = 0 \rightarrow n^2 - 17n - 20 = 0 \rightarrow n(n-17) = 20$
در جمله 9 آيم با هم شير اند.