

① - $t_n = \frac{r_{n-1}}{r_{n+1}} \rightarrow \frac{r_{n-1}}{r_{n+1}} < \frac{r}{r} \rightarrow 1n-1 < 4n+9 \rightarrow r_n < 12 \rightarrow n < 9$ (حلته)

الرجله عموماً رتبة درجته $t_n = an^r + bn + c$ در نظر بگیریم:

② - $\begin{matrix} 9 & 9 & 9 & 9 & \dots \\ \swarrow & \downarrow & \downarrow & \downarrow & \\ +9 & +3 & +0 & -3 & -9 \\ \swarrow & \downarrow & \downarrow & \downarrow & \\ -3 & -3 & -3 & \dots \end{matrix}$

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

$\Rightarrow t_n = An^r + Bn = \frac{-3}{r}n^r + \frac{15}{r}n \rightarrow \left. \begin{matrix} A = \frac{-3}{r} \\ B = \frac{15}{r} \end{matrix} \right\} \begin{matrix} 3A + 5B = \frac{-9}{r} + \frac{15}{r} = \frac{6}{r} = 33 \end{matrix}$

③ - $t_n = an^r + bn + c \rightarrow a, \frac{r}{r} = 1, c = -9 \rightarrow t_n = n^r + bn - 9 \rightarrow t_1 = 1^r + b(1) - 9 = -9$
 $b - 8 = -9 \rightarrow b = -1$
 (حلته منم افقی)

$\Rightarrow$ (باید درجه دوم) $t_n = n^r - n - 9$

$a_n = 5 \rightarrow a_r = 31$
 $a_8 = 41 \rightarrow d = \frac{a_8 - a_1}{8 - 1} = \frac{10}{7} = 14 \rightarrow (a_n = 5n + 1)$

$\Rightarrow n^r - n - 9 = 5n + 1 \rightarrow n^r - n - 5n - 1 + 9 \rightarrow n^r - 6n + 8 = 0$
 $n^r - 6n + 8 = 0 \rightarrow n(n-6) + 8 = 0 \rightarrow n(n-6) = -8$
 در جمله 9 آنم با هم شکر اند.