

نام و نام خانوادگی پاسخنانه تشریحی تکلیف شماره کلاس

$t_n = 3n^2 - 1$ $t_1 = 3(1)^2 - 1 = 2$ $t_2 = 3(2)^2 - 1 = 11$ $t_3 = 3(3)^2 - 1 = 26$ $t_4 = 3(4)^2 - 1 = 47$ $t_5 = 3(5)^2 - 1 = 74$ $2, 11, 26, 47, 74$	(الف)	$t_n = \frac{2n+1}{n+2}$ $t_1 = \frac{2+1}{1+2} = \frac{3}{3}$ $t_2 = \frac{4+1}{2+2} = \frac{5}{4}$ $t_3 = \frac{6+1}{3+2} = \frac{7}{5}$ $t_4 = \frac{8+1}{4+2} = \frac{9}{6} = \frac{3}{2}$ $t_5 = \frac{10+1}{5+2} = \frac{11}{7}$ $\frac{3}{3}, \frac{5}{4}, \frac{7}{5}, \frac{3}{2}, \frac{11}{7}$	۱
$t_n = \frac{(-1)^n}{\sqrt{n+3}}$ $t_{13} = \frac{(-1)^{13}}{\sqrt{13+3}} = \frac{-1}{\sqrt{16}} = \frac{-1}{4} = -\frac{1}{4}$	(الف)	$t_n = 2n - \left[\frac{n}{2} \right]$ $t_{13} = 26 - \left[\frac{13}{2} \right]$ $t_{13} = 26 - 6 = 20$ $t_{13} = 20$	۲
$t_n = 2n - 10$ $2n - 10 < 0$ $2n < 10$ $n < 5$ $1 \leq n \leq 4$ $(4-1)+1 = 4$	(الف)	$t_n = n^2 - 14n + 50$ $n^2 - 14n + 50 < 0 \rightarrow (n-4)(n-10) < 0$ $\begin{array}{c ccc} n & & 4 & 10 & \\ \hline & + & - & + & \end{array}$ $\downarrow$ $4 < n < 10 \rightarrow 5 \leq n \leq 9$ $(9-5)+1 = 5$	۳
$t_n = 2n - 19$ $2n - 19 \leq 0$ $2n \leq 19$ $n \leq 9$ $1 \leq n \leq 9$ $(9-1)+1 = 9$	(الف)	$t_n = n^2 - 12n + 27$ $n^2 - 12n + 27 \leq 0 \rightarrow (n-3)(n-9) \leq 0$ $\begin{array}{c ccc} n & & 3 & 9 & \\ \hline & + & - & + & \end{array}$ $\downarrow$ $3 \leq n \leq 9$ $(9-3)+1 = 7$	۴
$t_4 = 5$ $t_9 = 22$ $d_4 = a_1 + 4d = 22$ $d_9 = a_1 + 9d = 5$ $a_1 + 4d = 22$ $a_1 + 9d = 5$ $-5d = 17$ $d = -\frac{17}{5}$ $a_1 = 22 - 4d = 22 - 4(-\frac{17}{5}) = 22 + \frac{68}{5} = \frac{110}{5} + \frac{68}{5} = \frac{178}{5}$ $a_1 = \frac{178}{5}$		$a_1 + 3(3) = 5$ $a_1 = -2$ $a_3 = a_1 + 2d$ $a_3 = -2 + 4$ $a_3 = 2$	۵

$t_n = n^2 - 4n + 2$ $n_{min} = -\frac{b}{2a} = \frac{4}{2} = 2$ $t_2 = 2^2 - 4(2) + 2 = 9 - 8 + 2 = \boxed{-1}$	(الف) $t_n = n^2 + 4n + 1$ $n_{min} = -\frac{b}{2a} = -\frac{4}{2} = -2$ $t_{-2} = (-2)^2 + (-2) + 1 = 4 - 2 + 1 = \boxed{3}$	۶		
n حداقل باید ۱ باشد. کمترین جمله، جمله اول است				
$t_n = -4, -1, 8, 13, \dots$ $t_{10} = t_0 = -4$	$\textcircled{5}$	۷		
$t_n = -4, -1, 8, 13, \dots$ $t_n = an^2 + bn + c$ $\begin{cases} a + b + c = -4 \\ 4a + 2b + c = -1 \\ 9a + 3b + c = 8 \end{cases}$ $\begin{array}{r} -3a + b = 5 \\ 5a + b = 9 \\ \hline -8a = -4 \\ a = \frac{1}{2} \end{array}$	$t_n = \frac{1}{2}n^2 - n - 4$ $\textcircled{5}$	۸		
$(-\infty, a+4] \cap [2a+1, +\infty) = [2a+1, a+4]$ $2a+1 \leq a+4 \rightarrow a \leq 3 \xrightarrow{a=3} [2(3)+1, 3+4] = [7, 7]$ $\Downarrow$ $a = 3$	$\textcircled{5}$	۹		
(الف) $\left[\frac{100}{3} \right] = \boxed{33}$	(ب) $\left[\frac{100}{2} \right] = \boxed{50}$	(ج) $\left[\frac{100}{15} \right] = \boxed{6}$ $\textcircled{5}$	(د) $N(3 \cup 2) = N(3) + N(2) - N(3 \cap 2)$ $= 33 + 50 - 6 = \boxed{77}$	۱۰