

الف) $t_n = 3n^2 - 1 \rightarrow t_1 = 3 - 1 = 2$ $t_2 = 12 - 1 = 11$ $t_3 = 27 - 1 = 26$ $t_4 = 48 - 1 = 47$ $t_5 = 75 - 1 = 74$ $t_n = 3n^2 - 1 \rightarrow 2, 11, 26, 47, 74, \dots$ ب) $t_n = \frac{3n+1}{n+4}$, $t_1 = \frac{4}{5}$, $t_2 = \frac{5}{6}$, $t_3 = \frac{6}{7}$, $t_4 = \frac{7}{8}$, $t_5 = \frac{8}{9}$ $\rightarrow \frac{4}{5}, \frac{5}{6}, \frac{6}{7}, \frac{7}{8}, \frac{8}{9}, \dots$	1
الف) $t_n = \frac{(-1)^n}{\sqrt{n+3}}$ $\rightarrow t_{13} = \frac{(-1)^{13}}{\sqrt{13+3}} = \frac{-1}{4}$ ب) $t_n = 2n - \left[\frac{n}{4}\right] \rightarrow t_{13} = 26 - \left[\frac{13}{4}\right] = 26 - 3 = 23$	۲
الف) $t_n = 2n - 10 \rightarrow 2n - 10 < 0 \Rightarrow 2n < 10 \Rightarrow n < 5 \rightarrow$ عدد ۴ ب) $t_n = n^2 - 14n + 40 \rightarrow (n-10)(n-4) < 0 \rightarrow 4 < n < 10 \rightarrow$ عدد ۴	۳
الف) $t_n = 2n - 14 \rightarrow 2n - 14 \leq 0 \Rightarrow 2n \leq 14 \Rightarrow n \leq 7 \rightarrow$ عدد ۷ ب) $t_n = n^2 - 14n + 40 \rightarrow (n-7)(n-4) \leq 0 \rightarrow 4 \leq n \leq 7 \rightarrow$ عدد ۴	۴
$t_4 = 7 \rightarrow t_4 + 3d = 22 \Rightarrow 7 + 3d = 22 \Rightarrow d = 5$, $t_4 = a + 3d \Rightarrow 7 = a + 15 \Rightarrow a = -8$ $t_5 = 22 \Rightarrow t_5 = -8 + 4d = -8 + 20 = 12$	۵
الف) $t_n = n^2 - 4n + 2 \rightarrow t_1 = -3$, $t_2 = -4$, $t_3 = -5$, $t_4 = -4$, $t_5 = 3$, $t_6 = 2$ ب) $t_n = n^2 + 4n + 1 \rightarrow$ صوابه مثبت $\rightarrow t_1 = 1 + 4 + 1 = 6$	۶
$t_n = -\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \dots$ $t_n = an^2 + bn + c = n^2 + bn + c = n^2 + 4n + 1$ $t_1 = 1 + b + c = -\frac{1}{2}$ $t_2 = 4 + 2b + c = -\frac{1}{2}$ $\Rightarrow b = -4$, $c = 1$ $t_{10} = 100 - 40 + 1 = 61$	۷
$t_n = -\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \dots$ $t_1 = 2 + b + c = -\frac{1}{2}$ $t_2 = 1 + 2b + c = -1$ $\Rightarrow b = -1$, $c = -\frac{1}{2}$ $\Rightarrow t_n = n^2 - n - \frac{1}{2}$	۸
$n \in (-\infty, a+4] \cup [2a+1, +\infty) = 1 \Rightarrow 2a+1 \geq a+4 \Rightarrow a \geq 3$	۹
الف) $t_n = 3, 9, 9, \dots, 9 \Rightarrow t_n = 3n \Rightarrow 9 = 3n \Rightarrow n = 3$ ب) $t_n = 5, 10, 15, \dots, 95 \Rightarrow t_n = 5n \Rightarrow 95 = 5n \Rightarrow n = 19$ ج) $t_n = 1, 2, 3, 4, \dots, 9 \Rightarrow t_n = 1n \Rightarrow 9 = 1n \Rightarrow n = 9$ د) $n \in \{3, 9, 9, \dots, 99\} \cup \{5, 10, 15, \dots, 95\} = 33 + 19 - 9 = 43$	۱۰