

با جایگزینی در جمله عمومی $\leftarrow$ 7^4 و 47 و 24 و 11 و 2 (الف)

با جایگزینی در جمله عمومی $\leftarrow$ $\frac{11}{9}$ و $\frac{9}{8}$ و $\frac{7}{7}$ و $\frac{5}{4}$ و $\frac{3}{3}$ (ب)

(الف) $t_{13} = \frac{(1-1)^{13}}{\sqrt{13+3}} \rightarrow \boxed{-\frac{1}{4}}$

(ب) $t_{13} = 2(13) - \left[\frac{13}{4}\right] \rightarrow 26 - 3 \rightarrow \boxed{23}$

(الف) $2n-10 < 0 \rightarrow 2n < 10 \rightarrow n < 5 \rightarrow 1 \leq n \leq 4$ (۱۴)

(ب) $\frac{n^2-12n+15}{(n-10)(n-4)} < 0$ تعیین علامت $\frac{+}{-} \frac{-}{+} \frac{+}{-}$ $\rightarrow (4, 10) \rightarrow 5 \leq n \leq 9$ (۱۵)

(الف) $2n-14 < 0 \rightarrow 2n < 14 \rightarrow n < 7 \rightarrow 1 \leq n \leq 6$ (۱۶)

(ب) $\frac{n^2-12n+27}{(n-3)(n-9)} < 0$ تعیین علامت $\frac{+}{-} \frac{-}{+} \frac{+}{-}$ $\rightarrow [3, 9]$ (۱۷)

$t_4 = 7 \rightarrow 3(4) + b = 7 \rightarrow \underline{b = -5}$

$t_9 = 22 \rightarrow \overset{7}{t_9} + 5d = 22 \rightarrow 5d = 15 \rightarrow \underline{d = 3}$

$t_n = 3n - 5 \rightarrow t_p = 3(3) - 5 = \boxed{4}$ جواب

الف) $\min$ در $x=3$ $\rightarrow \frac{dy}{dx} = \frac{-b}{2a} \rightarrow \frac{4}{2} = 2 \rightarrow 3^2 - 4(3) + 4 = -5$ ب) $\max$ در $x=-2$ $\rightarrow \frac{dy}{dx} = \frac{-b}{2a} \rightarrow \frac{-4}{2} = -2 \rightarrow (-2)^2 + 4(-2) + 11 = -3$	
$-4, -7, -1, -7, -4$ $\rightarrow$ $t_n = n^2 - 4n + 1$ $\rightarrow 10^2 - 4(10) + 1 = 1$ $(-1, b=-4, a=1)$ $\rightarrow 2a=2$ $an^2 + bn + c$ $\rightarrow$ $a+b+c = -4 \rightarrow c = -4-a-b$ $4a+2b-4-a-b = -7$ $9a+3b-4-a-b = -1$ $3a+b = -3$	۶
$-4, -1, 1, 2, 1$ $\rightarrow$ $t_n = 2n^2 - n - 4$ $an^2 + bn + c$ $\rightarrow$ $a+b+c = -4 \rightarrow c = -4-a-b$ $4a+2b-4-a-b = -1$ $9a+3b-4-a-b = 1$ $3a+b = 5$ $2a = 1 \rightarrow a = \frac{1}{2}$ $c = -4, b = 1$	۸
$(-\infty, a+4], [2a+1, +\infty)$ $\rightarrow$ $[2a+1, a+4]$ $a \geq 3 \rightarrow 2a+1 \geq a+4$	۹
الف) $3, 4, 9, 12, \dots, 99$ $\rightarrow$ $\frac{99-3}{3} + 1 = 33$ ب) $5, 10, 15, 20, \dots, 95$ $\rightarrow$ $\frac{95-5}{5} + 1 = 19$ ج) $15, 20, 25, \dots, 95$ $\rightarrow$ $\frac{95-15}{5} + 1 = 19$ د) $n(a \cup b) = n(a) + n(b) - n(a \cap b)$ $= 19 + 33 - 4 = 48$	۱۰