

$$\text{الف) } t_n = 3n^2 - 1 \Rightarrow t_1 = 3(1)^2 - 1 = 2 \quad t_2 = 3(2)^2 - 1 = 11 \\ t_3 = 3(3)^2 - 1 = 22 \quad t_4 = 3(4)^2 - 1 = 47 \\ t_5 = 3(5)^2 - 1 = 74 \quad \dots$$

$$\text{ب) } t_n = \frac{2n+1}{n+2} \Rightarrow t_1 = \frac{2(1)+1}{1+2} = \frac{3}{3} = 1 \quad t_2 = \frac{2(2)+1}{2+2} = \frac{5}{4} = 1.25 \\ t_3 = \frac{2(3)+1}{3+2} = \frac{7}{5} = 1.4 \quad t_4 = \frac{2(4)+1}{4+2} = \frac{9}{6} = 1.5 \\ t_5 = \frac{2(5)+1}{5+2} = \frac{11}{7} \approx 1.57 \quad \dots$$

$$\text{الف) } t_n = \frac{(-1)^n}{\sqrt{n+3}} \Rightarrow t_{13} = \frac{(-1)^{13}}{\sqrt{13+3}} = \frac{-1}{\sqrt{16}} = -\frac{1}{4}$$

$$\text{ب) } t_n = 2n - \left\lfloor \frac{n}{2} \right\rfloor \Rightarrow t_{13} = 2(13) - \left\lfloor \frac{13}{2} \right\rfloor = 26 - 6 = 20$$

$$\text{الف) } t_n = 2n - 10 \Rightarrow 2n - 10 < 0 \Rightarrow 2n < 10 \Rightarrow n < 5 \Rightarrow 1 \leq n < 5$$

$$\text{ب) } t_n = n^2 - 12n + 30 \Rightarrow n^2 - 12n + 30 < 0 \Rightarrow (n-6)(n-5) < 0$$

$$\text{الف) } t_n = 2n - 14 \Rightarrow 2n - 14 \leq 0 \Rightarrow 2n \leq 14 \Rightarrow n \leq 7 \Rightarrow 1 \leq n \leq 7$$

$$\text{ب) } t_n = n^2 - 12n + 30 \Rightarrow n^2 - 12n + 30 \leq 0 \Rightarrow (n-6)(n-5) \leq 0$$

$$t_2 = 11 \quad t_9 = 74 \quad t_{13} = 22 \\ t_2 = t_9 + (9-2)d \Rightarrow 11 = 74 + (7)d \Rightarrow 11 - 74 = 7d \Rightarrow -63 = 7d \Rightarrow d = -9 \\ t_2 = t_{13} + (13-2)d \Rightarrow 11 = 22 + (11)d \Rightarrow 11 - 22 = 11d \Rightarrow -11 = 11d \Rightarrow d = -1$$

الف) $t_n = n^2 - 4n + 1 \Rightarrow n = \frac{-b}{2a} = 2 \rightarrow t_2 = 4 - 8 + 1 \Rightarrow t_2 = -4$

ا) 30

جمله ی حسابی

ب) $t_n = n^2 + 8n + 1 \Rightarrow n = \frac{-b}{2a} = -1 \rightarrow t_{-1} = 1 - 8 + 1 \Rightarrow t_{-1} = -6$

ا) 30

جمله ی حسابی

$t_n = -1, -3, -5, -7, -9, \dots$
 $t_n = an^2 + bn + c \rightarrow t_n = n^2 - 4n + 1$
 $t_1 = 1(1)^2 + b(1) + c = -1$
 $t_2 = 1(2)^2 + b(2) + c = -3$
 $\begin{cases} 1 + b + c = -1 \\ 4 + 2b + c = -3 \end{cases}$
 $\begin{cases} b + c = -2 \\ -b - c = 7 \end{cases}$
 $\begin{cases} b = -4 \\ c = +1 \end{cases}$
 $t_{10} = 100 - 40 + 1 = 61$

$t_n = -4, -1, 2, 5, \dots$
 $t_n = an^2 + bn + c \rightarrow t_n = 2n^2 - n - 4$
 $t_1 = 2(1)^2 + b(1) + c = -4$
 $t_2 = 2(2)^2 + b(2) + c = -1$
 $\begin{cases} 2 + b + c = -4 \\ 8 + 2b + c = -1 \end{cases}$
 $\begin{cases} b + c = -6 \\ -b - c = 9 \end{cases}$
 $\begin{cases} b = -1 \\ c = -5 \end{cases}$

$(-\infty, a + \epsilon] \cap [2a + 1, +\infty) = [2a + 1, a + \epsilon]$

چون سوال گفته

مستحقه پس

$\begin{cases} 2a + 1 \leq a + \epsilon \rightarrow a \leq 3 \\ a + \epsilon \leq 2a + 1 \rightarrow 3 \leq a \end{cases} \rightarrow a \leq 3 \rightarrow \checkmark$
 $a \geq 3 \rightarrow \times$

$a \leq 3$

الف) $3, 4, 9, \dots, 99$ $t_1 = 3, t_n = 99$ $d = 3$ $t_n = 3 + (n-1)3 = 99$ $n = 33$ $3n = 99$ $t_{33} = 99$

ب) $1, 10, 19, \dots, 100$ $t_1 = 100, t_n = 100$ $d = 9$ $100 = 100 + (n-1)9$ $n = 1$ $t_1 = 100$

ج) $1, 5, 9, \dots, 90$ $t_1 = 10, t_n = 90$ $d = 4$ $10 = 10 + (n-1)4$ $n = 1$ $t_1 = 10$

د) $1, 5, 9, \dots, 90$ $t_1 = 10, t_n = 90$ $d = 4$ $10 = 10 + (n-1)4$ $n = 1$ $t_1 = 10$