

الف) $t_n = 2n^2 - 1$

t_1	t_2	t_3	t_4	t_5
1	11	29	47	65

ب) $t_n = \frac{2n+1}{n+4}$

t_1	t_2	t_3	t_4	t_5
$\frac{3}{5}$	$\frac{5}{6}$	$\frac{7}{7}=1$	$\frac{9}{8}$	$\frac{11}{9}$

ج) $t_n = \frac{(-1)^n}{\sqrt{n+3}}$ $t_{12} = \frac{-1}{4}$

د) $t_n = 2n - \left\lceil \frac{n}{2} \right\rceil$ $t_{12} = 24 - \left\lceil \frac{12}{2} \right\rceil = 24 - 6 = 18$

الف) $t_n = 2n - 1$ $2n - 1 < 0$ $\frac{2}{n-1} < 0$ $1 < n < \infty$ ع ۴

ب) $t_n = n^2 - 14n + 40$ $n^2 - 14n + 40 < 0$ $(n-4)(n-10) < 0$ $4 < n < 10$ ع ۵

ج) $t_n = 2n - 12$ $2n - 12 < 0$ $2(n-6) < 0$ $1 < n < 6$ ع ۱

د) $t_n = n^2 - 12n + 27$ $n^2 - 12n + 27 < 0$ $(n-3)(n-9) < 0$ $3 < n < 9$ ع ۷

الف) $t_5 = 7$ $t_5 + 4d = t_9$ $7 + 4d = 22$ $4d = 15 \rightarrow d = \frac{15}{4}$

ب) $t_9 = 22$ $7 + 4d = 22$ $4d = 15 \rightarrow d = \frac{15}{4}$

ج) $t_n = n^2 - 4n + 2$ $\min \left| \frac{t_n}{-4} = -1 \right|$

-2

د) $t_n = n^2 + 4n + 1$ $\min \left| \frac{-4}{-2} = -2 \right|$

-3

$t_n = -1, -5, -9, -13, -17, \dots$ $t_n = an^2 + bn + c$

$a = \frac{r}{r} = 1$ $t_n = n^2 + bn + 1$ $t_1 = 1 + b + 1 = -1$ $b = -3$

$t_n = n^2 + (-4)n + 1$ $t_{10} = 100 - 40 + 1 = 61$

$t_n = -7, -1, 5, 11, \dots$ $t_n = 2n^2 + bn + c$

$2 + b + c = -7 \rightarrow b + c = -9$

$12 + 2b + c = -1 \rightarrow 2b + c = -13$

$c = -9$

$2b - 9 = -13 \rightarrow 2b = -4 \rightarrow b = -2$

$a = \frac{4}{2} = 2$

$t_n = 2n^2 - 2n - 9$

$$(-\infty, a+4] \text{ و } [a+1, +\infty)$$

اما چون گفت متنهای

$$2a+1 \geq a+4 \Rightarrow 2a+1 = a+4$$

در حالت اول برای اشتراک بازه باید به این صورت باشد.

$$a = 3$$

الف) $3, 6, 9, \dots, 99 \rightarrow 3a \mid a \leq 99 \sim 1 \leq a \leq 99 \rightarrow \underline{6-99}$

ب) $5, 10, 15, \dots, 95 \rightarrow 5a \mid a \leq 19 \quad 1 \leq a \leq 19 \rightarrow \underline{6-19}$

ج) $15, 30, 45, 60, \dots, 90 \rightarrow 15a \mid a \leq 6 \quad 1 \leq a \leq 6 \rightarrow \underline{6-6}$

$\underbrace{15 \quad 30 \quad 45}_{15} \quad \underbrace{60 \quad 75 \quad 90}_{15}$

د) $n(A \cup B) = n(A) + n(B) - n(A \cap B)$

$n(A \cup B) = 32 + 19 - 6 = 45$

