

الف $t_n = 2n^2 - 1$ $2 \times 1 - 1 = 1$ $2 \times 2^2 - 1 = 7$ $2 \times 3^2 - 1 = 17$ $2 \times 4^2 - 1 = 31$ $2 \times 5^2 - 1 = 49$
 $\therefore 1, 7, 17, 31, 49$

ب $t_n = \frac{4n+1}{n+2}$ $t_1 = \frac{4 \times 1 + 1}{1+2} = \frac{5}{3}$ $t_2 = \frac{4 \times 2 + 1}{2+2} = \frac{9}{4}$ $t_3 = \frac{4 \times 3 + 1}{3+2} = \frac{13}{5}$ $t_4 = \frac{4 \times 4 + 1}{4+2} = \frac{17}{6}$ $t_5 = \frac{4 \times 5 + 1}{5+2} = \frac{21}{7}$
 $\therefore \frac{5}{3}, \frac{9}{4}, \frac{13}{5}, \frac{17}{6}, \frac{21}{7}$

الف $t_n = \frac{(-1)^n}{\sqrt{n+2}}$ $t_{12} = \frac{(-1)^{12}}{\sqrt{12+2}} = \frac{1}{\sqrt{14}}$

ب $t_n = 4n - \left\lfloor \frac{n}{2} \right\rfloor$ $\therefore t_{12} = 4 \times 12 - \left\lfloor \frac{12}{2} \right\rfloor = 48 - 6 = 42$

الف $t_n = 2n - 10$ $2n - 10 = 0 \Rightarrow n = 5$
 $\therefore 1, 2, 3, 4, 5$

ب $t_n = n^2 - 12n + 20$ $\Rightarrow t_n = (n-2)(n-10)$ $\therefore 2, 10$
 $\therefore 2, 10$

الف $t_n = 2n - 14$ $2n - 14 = 0 \Rightarrow n = 7$
 $\therefore 1, 2, 3, 4, 5, 6, 7$

ب $t_n = n^2 - 12n + 27$ $\Rightarrow t_n = (n-3)(n-9)$ $\therefore 3, 9$
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$\therefore \frac{t_m - t_n}{m - n} \Rightarrow \frac{9 - 2}{4 - 2} = \frac{7}{2} = \frac{1}{2} \Rightarrow \therefore$

$t_4 = t_2 - \therefore = 7 - \frac{1}{2} = \frac{13}{2} = \left\lfloor \frac{13}{2} \right\rfloor$

الف) $t_n = n^2 - 4n + 4$

ب) $t_n = n^2 + 4n + 1$ $t_1 = 1 + 4 + 1 = 6$

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الف) $t_n = -4, -1, 1, 4, \dots$

$t_n = an^2 + bn + c$

$t_1 = 1 + b + c$

$t_2 = 4 + 2b + c$

$t_3 = 9 + 3b + c$

$t_4 = 16 + 4b + c$

$t_5 = 25 + 5b + c$

$t_6 = 36 + 6b + c$

$t_7 = 49 + 7b + c$

$t_8 = 64 + 8b + c$

$t_9 = 81 + 9b + c$

$t_{10} = 100 + 10b + c$

$t_{10} = 100 - 40 + 1 = 61$

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$t_{10} = 100 - 40 + 1 = 61$

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$a + k \leq 4a + 1 \Rightarrow 3 \leq a$

الف) $3, 4, 9, \dots, 99$

ب) $5, 10, 15, 20, \dots, 95$

ج) $15, 30, 45, 60, 75, 90$

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الف) $t_n = 3n \Rightarrow 3n = 99 \Rightarrow n = 33$

ب) $t_n = 5n \Rightarrow 5n = 95 \Rightarrow n = 19$

ج) $15, 30, 45, 60, 75, 90$

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الف) $n(A \cup B) = n(A) + n(B) - n(A \cap B) \Rightarrow 33 + 19 - 4 = 48$

ب) $n(A) = 19$ $n(B) = 33$