

الف) $t_1 = 3 \times 1^2 - 1 = 2$
 $t_2 = 3 \times 2^2 - 1 = 11$
 $t_3 = 3 \times 3^2 - 1 = 26$
 $t_4 = 3 \times 4^2 - 1 = 47$
 $t_5 = 3 \times 5^2 - 1 = 74$

2, 11, 26, 47, 74, ...

①

ب) $t_1 = \frac{2 \times 1 + 1}{1 + 4} = \frac{3}{5}$
 $t_2 = \frac{2 \times 2 + 1}{2 + 4} = \frac{5}{6}$
 $t_3 = \frac{2 \times 3 + 1}{3 + 4} = \frac{7}{7} = 1$
 $t_4 = \frac{2 \times 4 + 1}{4 + 4} = \frac{9}{8}$
 $t_5 = \frac{2 \times 5 + 1}{5 + 4} = \frac{11}{9}$

$\frac{3}{5}, \frac{5}{6}, 1, \frac{9}{8}, \frac{11}{9}, \dots$

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

②

ب) $t_{13} = 2 \times 13 - \left[\frac{13}{4} \right] \Rightarrow 26 - 3 = 23$
 $\frac{13}{4} \approx 3.25$

الف) $t_n = 2n - 10 \rightarrow 2n - 10 < 0 \rightarrow n < 5 \rightarrow n = \{1, 2, 3, 4\}$ جمله ۴

③

ب) $t_n = \frac{n^2 - 11n + 10}{(n-4)(n-10)} < 0 \rightarrow \frac{4}{+} \frac{10}{-} \rightarrow [4, 10] \Rightarrow 4 < n < 10 \rightarrow$ جمله ۵
 $5, 6, 7, 8, 9$

الف) $t_n = 2n - 19 \rightarrow 2n - 19 < 0 \rightarrow n < 9.5 \rightarrow n = \{1, 2, 3, \dots, 9\} \rightarrow$ جمله ۸

④

ب) $\frac{n^2 - 11n + 17}{(n-3)(n-9)} < 0 \rightarrow (n-3)(n-9) < 0 \rightarrow \frac{3}{+} \frac{9}{-} \rightarrow n \Rightarrow 3 < n < 9 \rightarrow$ جمله ۷
 $4, 5, 6, 7, 8$

$t_4 = 7, t_9 = 22 \rightarrow t_3 = ?$ $a_n = a_1 + (n-1)d$

$a_4 = a_1 + (4-1)d = 7$
 $a_9 = a_1 + (9-1)d = 22$

$\left. \begin{array}{l} a_4 = a_1 + 3d = 7 \\ a_9 = a_1 + 8d = 22 \end{array} \right\} \Rightarrow d = 1 \Rightarrow a_1 = 4$

$a_3 = a_1 + (3-1)d = 4 + 2 \times 1 = 6$

⑤

الف) $t_n = n^2 - 9n + 2 \xrightarrow{n=1} 1^2 - 9 \times 1 + 2 = -3$

⑥

ب) $t_n = n^2 + 4n + 1 \xrightarrow{n=1} 1^2 + 4 \times 1 + 1 = 6$

$t_n = -4, -7, -1, -7, -4 \rightarrow 2a = 2 \rightarrow \boxed{a=1}$
 $\boxed{C=1}$
 $t_n = an^2 + bn + c \rightarrow t_1 = 1 + b + 1 = -4$
 $1 + b = -4 \rightarrow b = -5$
 $t_n = n^2 - 5n + 1$
 $t_{10} = 100 - 50 + 1 = 51$

$t_n = -9, -1, 1, 2, \dots$
 $2a = 4 \rightarrow \boxed{a=2}$
 $\boxed{C=-5}$
 $t_n = 2n + bn - 5$
 $t_1 = 2 + b - 5 = -9 \rightarrow \boxed{b=-1}$
 $t_n = 2n - 5n - 5$

$(-\infty, a+4] \cap [2a+1, +\infty) \rightarrow$ ختمی $\Rightarrow a+4 = 2a+1 \rightarrow 3a = 3 \rightarrow \boxed{a=1}$
 $\left\{ \begin{array}{l} a+4 = 0 \rightarrow \boxed{a=-4} \\ 2a+1 = 0 \rightarrow \boxed{a=-\frac{1}{2}} \end{array} \right.$

الف) $\frac{100}{3} = 33,3 \rightarrow$ عدد 33

ب) $\frac{100}{5} = 20 \rightarrow$ عدد 20

ج) $3, 5 \rightarrow 15 \Rightarrow \frac{100}{15} = 6,6 \rightarrow$ عدد 6

د) $n(3 \cup 5) = n(3) + n(5) - n(3 \cap 5) \Rightarrow 33 + 20 - 6 = 47$