

الف) $a_1 = 2$ $a_2 = 11$ $a_3 = 24$ $a_4 = 45$ $a_5 = 76$ $2, 11, 24, 45, 76, \dots$
 ب) $a_1 = \frac{1}{2}$ $a_2 = \frac{5}{4}$ $a_3 = 1$ $a_4 = \frac{9}{4}$ $a_5 = \frac{11}{2}$ $\frac{1}{2}, \frac{5}{4}, 1, \frac{9}{4}, \frac{11}{2}, \dots$

الف) $t_{13} = \frac{(-1)^{13}}{\sqrt{1+2}} = \frac{-1}{\sqrt{3}} = -\frac{1}{\sqrt{3}}$

ب) $t_{13} = 29 - \left[\frac{13}{2} \right] = 29 - 6 = 23$

الف) $2n < 10$ $n < 5$ $\frac{5}{-2}$ $\{1, 2, 3, 4\}$ $n \leq 4$

ب) $n^2 - 14n + 49 \geq (n-7)(n-7) \leq 0$ $\frac{7}{-7}$ $(7, 10)$ $\{5, 6, 7, 8, 9\}$ $n \geq 5$

الف) $2n - 14 \leq 0$ $2n \leq 14$ $n \leq 7$ $\frac{7}{-2}$ $\{1, 2, 3, 4, 5, 6, 7\}$ $n \leq 7$

ب) $n^2 - 12n + 36 \leq 0 \Rightarrow (n-6)(n-6) \leq 0$ $\frac{6}{-6}$ $[6, 9]$ $\{6, 7, 8, 9\}$ $n \geq 6$

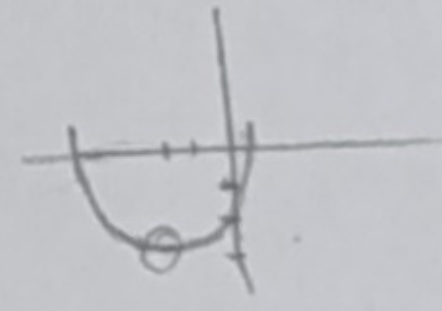
$\begin{cases} a_2 = 2a + d = 5 \\ a_3 = 3a + d = 7 \end{cases} \Rightarrow \begin{cases} 2a + d = 5 \\ 3a + d = 7 \end{cases} \Rightarrow \begin{cases} a = 2 \\ d = 1 \end{cases}$

$t_2 = 1a + d = 2 + 1 = 3$

الف) $x_{min} \xrightarrow{a > 0} n = \frac{-b}{2a} = \frac{-4}{2} = -2$ $y_{min} = \frac{9 - 16 + 4}{-4} = -1$



ب) $x_{min} \xrightarrow{a > 0} n = \frac{-b}{2a} = \frac{-2}{2} = -1$ $y_{min} = \frac{-1}{-2} + 1 = \frac{1}{2}$



① $-1, -5, -9, -13, -17, \dots$ $a_1 = -1$ $a = -4$ $t_0 = 1$ $c = 1$
 $a_n^2 + bn + c \xrightarrow{\text{معمولی}} n^2 - 4n + 1$
 $t_1 = -1 = 1 - 4 + 1 = -2$

$-4, -1, 2, 5, 8, \dots$ $a_1 = -4$ $a = 3$ $t_0 = -1$ $c = -1$
 $a_n^2 + bn + c \xrightarrow{\text{معمولی}} n^2 - n - 1$
 $t_1 = 4(1)^2 + b(-1) - 1 = -4 \Rightarrow b = -1$

$a + 1 \leq 2a + 1$ $1 \leq 2a - a$ $a \geq 1$ $[1, +\infty)$

الف) $\left[\frac{1}{2} \right] = 2$

ب) $\left[\frac{1}{5} \right] = 2$

ج) $\left[\frac{1}{15} \right] = 4$

د) $n(A \cup B) = n(A) + n(B) - n(A \cap B) = 13 + 12 - 4 = 21$