

کارنامه سیتی - دهم دفتر B

1)

$$a_n = t_n = 3n^2 - 1 \quad \begin{cases} t_1 = 3 \times 1 - 1 = 2 \\ t_2 = 3 \times 4 - 1 = 11 \\ t_3 = 3 \times 9 - 1 = 26 \\ t_4 = 3 \times 16 - 1 = 47 \\ t_5 = 3 \times 25 - 1 = 74 \end{cases}$$

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

$$b) t_n = \frac{3n+1}{n+2} \quad \begin{cases} t_1 = \frac{3 \times 1 + 1}{1 + 2} = \frac{4}{3} \\ t_2 = \frac{3 \times 2 + 1}{2 + 2} = \frac{7}{4} \\ t_3 = \frac{3 \times 3 + 1}{3 + 2} = \frac{10}{5} = 2 \end{cases}$$

$$t_4 = \frac{3 \times 4 + 1}{4 + 2} = \frac{13}{6}$$

$$t_5 = \frac{3 \times 5 + 1}{5 + 2} = \frac{16}{7}$$

$\frac{4}{3}, \frac{7}{4}, 2, \frac{13}{6}, \frac{16}{7}, \dots$

2)

$$a_n = t_n = \frac{(-1)^n}{\sqrt{n+2}} = \frac{(-1)^{100}}{\sqrt{102}} = \left| \frac{-1}{\sqrt{102}} \right|$$

$$b) = 3 \times 100 - \left\lceil \frac{100}{2} \right\rceil = 295$$

3)

$$a_n = t_n = 2n - 1$$

$$2n - 1 = 0 \rightarrow n = \frac{1}{2}$$

$$-\infty < \frac{1}{2} < +\infty \rightarrow n < \infty$$

$$-\phi +$$

$$\downarrow 1, 2, 3, 4, \dots \in \mathbb{N}$$

$$b) = t_n = n^2 - 1 \quad (n-1)(n+1)$$

$$-\infty < 1 < +\infty \rightarrow (1, \infty)$$

$$+\phi - \phi +$$

$$\downarrow 2, 3, 4, 5, 6, \dots \in \mathbb{N}$$

4)

$$a_n = t_n = 2n - 3 \rightarrow 2n - 3 = 0 \rightarrow n = \frac{3}{2}$$

$$-\infty < \frac{3}{2} < +\infty$$

$$n \leq 1 \rightarrow 1, 2, 3, 4, 5, 6, 7, 8, 9$$

$$-\phi +$$

$$\in \mathbb{N}$$

$$b) t_n = n^2 - 1 \quad (n-1)(n+1)$$

$$-\infty < 1 < +\infty \rightarrow [1, \infty)$$

$$\rightarrow 2, 3, 4, 5, 6, 7, 8, 9$$

$$+\phi - \phi +$$

$$\in \mathbb{N}$$

5)

?

6)

ا) $f_n = n^2 - 4n + 2 \rightarrow \frac{a}{\min}, b < 0, c > 0$

$$\begin{cases} x_{\min} = \frac{-b}{2a} = \frac{4}{2} = 2 \\ y_{\min} = (2)^2 - 4(2) + 2 = -2 \end{cases}$$

ب) $f_n = n^2 + 4n + 1 \rightarrow \frac{a}{\min}, b > 0, c > 0$

$$\begin{cases} x_{\min} = \frac{-b}{2a} = \frac{-4}{2} = -2 \\ y_{\min} = (-2)^2 + 4(-2) + 1 = -3 \end{cases}$$

ج) $f_n = -n^2 - 4n - 1$

نجد القيم $\begin{cases} -2 & -1 & 0 & 1 & 2 \end{cases}$

$\downarrow$

$-1 & -4 & -1 & 3 & 8$

$\rightarrow x = -2 \rightarrow a = 1$

$an^2 + bn + c = f_n$

$\begin{cases} f_1 = 1 + b + c = -1 \rightarrow b + c = -2 \\ f_2 = 4 + 2b + c = -4 \rightarrow 2b + c = -8 \end{cases}$

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

$a = 1, b = -9, c = 7 \rightarrow n^2 - 9n + 7 = f_n$

(1.) $1^2 - 9(1) + 7 = f_1 = -1$

د) $f_n = -n^2 - 4n - 1$

نجد القيم $\begin{cases} -2 & -1 & 0 & 1 & 2 \end{cases}$

$\downarrow$

$-1 & -4 & -1 & 3 & 8$

$\rightarrow x = -2 \rightarrow a = 1$

$an^2 + bn + c = f_n$

$\begin{cases} f_1 = 1 + b + c = -1 \rightarrow b + c = -2 \\ f_2 = 4 + 2b + c = -4 \rightarrow 2b + c = -8 \end{cases}$

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

$a = 1, b = -9, c = 7 \rightarrow n^2 - 9n + 7 = f_n$

هـ) $\rightarrow (-\infty, a + 1] \cup [a + 1, +\infty) \rightarrow$ جميع

$\frac{x+1}{x+1} \rightarrow 1$

$\frac{x+1}{x+1} \rightarrow 1$

$\rightarrow x \geq a$

و) ا) $\frac{99-1}{1} + 1 = 99$ ب) $\frac{100-0}{0} + 1 = 100$ ج) $\frac{20-10}{10} + 1 = 2$

د) $100 + 10 - 1 = 109$ هـ) $100 + 10 - 1 = 109$