

Subject

Date : Year.

Month:

Day:

زنگنه سادات حسینی

$$\text{الف) } t_n = 3n^2 - 1 \rightarrow \begin{matrix} n=1 \rightarrow 2 \\ n=2 \rightarrow 11 \end{matrix} \quad \begin{matrix} n=3 \rightarrow 24 \\ n=4 \rightarrow 47 \end{matrix} \quad n=5 \rightarrow 74 \quad (1)$$

$$\text{ب) } t_n = \frac{2n+1}{n+4} \rightarrow \begin{matrix} n=1 \rightarrow \frac{3}{5} \\ n=2 \rightarrow \frac{3}{6} \end{matrix} \quad \begin{matrix} n=3 \rightarrow 1 \\ n=4 \rightarrow \frac{9}{8} \end{matrix} \quad n=5 \rightarrow \frac{11}{9}$$

$$5 \quad \text{الف) } t_n = \frac{(-1)^n}{\sqrt{n+3}} \rightarrow t_{13} = \frac{(-1)^{13}}{\sqrt{13+3}} \rightarrow t_{13} = \frac{-1}{4} \rightarrow \boxed{t_{13} = -\frac{1}{4}} \quad (2)$$

$$\text{ب) } t_n = 2n - \left\lfloor \frac{n}{4} \right\rfloor \rightarrow t_{13} = 24 - \left\lfloor \frac{13}{4} \right\rfloor \rightarrow 24 - 3 = 21 \rightarrow \boxed{t_{13} = 21}$$

$$10 \quad \text{الف) } t_n = 2n - 10 \rightarrow 2n - 10 < 0 \rightarrow 2n < 10 \rightarrow n < 5 \quad \boxed{\text{4 جمله منفی است}} \quad (3)$$

$$\text{ب) } t_n = n^2 - 14n + 40 \rightarrow (n-4)(n-10) \rightarrow \begin{matrix} \downarrow 4 \\ \downarrow 10 \end{matrix} \quad \frac{4-10}{+ \quad - \quad - \quad +} \quad \boxed{4 < n < 10} \quad \begin{matrix} \text{در این بازه} \\ \text{منفی است} \end{matrix}$$

4, 5, 6, 7, 8, 9

در 6 جمله منفی است.

$$15 \quad \text{الف) } t_n = 2n - 14 \rightarrow 2n - 14 < 0 \rightarrow 2n < 14 \rightarrow n < 7 \quad \boxed{6.1} \quad (4)$$

$$\text{ب) } t_n = n^2 - 14n + 27 \rightarrow (n-3)(n-9) \rightarrow \begin{matrix} \downarrow 3 \\ \downarrow 9 \end{matrix} \quad \frac{3-9}{+ \quad - \quad - \quad +} \quad \boxed{6.2}$$

3 < n < 9

Subject

Date : Year:

Month:

Day:

t_n

(3)

$$t_x = V \rightarrow 5a + b \Rightarrow 5a = 15$$

$$t_a = 22 \rightarrow 9a + b \quad \boxed{a = 3}$$

$t_p = ?$

$$t_x = 14 + b = V \rightarrow \boxed{b = -1}$$

$$t_p = 14a + b \quad 9 - a = 12 \quad \boxed{12}$$

(4) ✓

$$f(n) = n^2 - 4n + 2$$

$$\min / \frac{-b}{2a} = \frac{4}{2} = 2$$

$$n^2 - 4n + 2 \xrightarrow{(n=2)} 9 - 11 + 2 = -V$$

$$t_n = n^2 + \varepsilon n + 1 \quad (n \in \mathbb{N})$$

$$\min / \frac{-b}{2a} \rightarrow \frac{-\varepsilon}{2} = -2$$

$$n^2 + \varepsilon n + 1$$

$$n = 2$$

$$\varepsilon - 1 + 1 = -3$$

$$n = 1 \Rightarrow n^2 + \varepsilon n + 1 = 1 + \varepsilon + 1 = 4$$

10

$$t_n = 1^2 - \varepsilon + 1 = 2 - \varepsilon$$

$$t_2 = 2^2 - \varepsilon + 1 = 5 - \varepsilon$$

$$t_3 = 3^2 - \varepsilon + 1 = 10 - \varepsilon$$

$$t_4 = 4^2 - \varepsilon + 1 = 17 - \varepsilon$$

$$t_5 = 5^2 - \varepsilon + 1 = 26 - \varepsilon$$

$$t_2 = 4 + 2b + 1 = 5 \Rightarrow 2b = 1 \Rightarrow b = \frac{1}{2}$$

$$2b = 4 \Rightarrow b = 2$$

$$t_n = an^2 + bn + c$$

$$t_n = n^2 + bn + 1 \Rightarrow n^2 - 4n + 1$$

$$t_{10} = 100 + 40 + 1 = 141$$

15

$$2a = 2 \Rightarrow a = 1$$

$$c = 1$$

$$t_n = -V, 4, 1, 11, 21, \dots$$

$$t_n = an^2 + bn + c$$

$$t_n = 2n^2 + bn - V$$

$$t_n = 2n^2 - n - V$$

$$2a = 4 \Rightarrow a = 2$$

$$c = -V$$

$$t_2 = 2(2)^2 + b(2) - V = 11 - V \Rightarrow 1 + 2b = -1$$

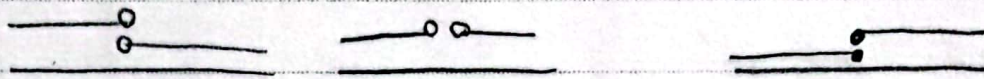
$$b = -1$$

parsian

(1) ✓

$$(-\infty, a+\varepsilon] \cap [2a+1, +\infty)$$

(9)



$$2a+1 \geq a+\varepsilon \Rightarrow \boxed{3 \leq a}$$

5

اعداد صحیح (10)

۳, ۴, ۹, ۱۲, ...
 $+3, +4, +9, +12$

۳۳ عدد

$$Q_n = 3n \rightarrow 3n < 10.1 \rightarrow n < 3.3, 4$$

$$n = 1, 2, 3, \dots, 33$$

۱۵, ۲۰, ۲۵, ...
 $+15, +20, +25$

$$Q_n = 5n$$

$$5n < 10.1 \rightarrow n < 2.02$$

$$n = 1, 2, 3, \dots, 2$$

۱۵, ۳۰, ۴۵, ...
 $+15, +30, +45$

$$Q_n = 15n$$

$$15n < 10.1 \rightarrow n < 0.67 \rightarrow n = 1$$

(د) مجموع با به معنی ۱۵ یا معنی ۳۰؟

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

$$33 + 20 - 4 = \boxed{49}$$