

أولاً نلاحظ أن

1- $t_n = 3n^2 - 1$

$n=1 \rightarrow t_1 = 3(1)^2 - 1 \rightarrow 3 - 1 = 2$

$n=2 \rightarrow t_2 = 3(2)^2 - 1 \rightarrow 12 - 1 = 11$

$n=3 \rightarrow t_3 = 3(3)^2 - 1 \rightarrow 27 - 1 = 26$

$n=4 \rightarrow t_4 = 3(4)^2 - 1 \rightarrow 48 - 1 = 47$

$n=5 \rightarrow t_5 = 3(5)^2 - 1 \rightarrow 75 - 1 = 74$

2- $t_n = \frac{n(n+1)}{n+2}$

$n=1 \rightarrow \frac{1 \times 1 + 1}{1+2} = \frac{2}{3}$

$n=2 \rightarrow \frac{2 \times 2 + 1}{2+2} = \frac{5}{4}$

$n=3 \rightarrow \frac{3 \times 3 + 1}{3+2} = \frac{10}{5} = 2$

$n=4 \rightarrow \frac{4 \times 4 + 1}{4+2} = \frac{17}{6}$

$n=5 \rightarrow \frac{5 \times 5 + 1}{5+2} = \frac{26}{7}$

3- $t_{13} = \frac{(-1)^{13}}{\sqrt{13+3}} = \frac{-1}{\sqrt{16}} = \frac{-1}{4}$

4- $t_{13} = 4 \times 13 - \left[\frac{13}{4} \right] = 52 - 3 = 49$

5- $t_n = 2n - 10 \rightarrow 2n - 10 < 0 \rightarrow 2n < 10 \rightarrow n < 5 \rightarrow 1, 2, 3, 4$

6- $t_n = n^2 - 14n + 40 \rightarrow (n-2)(n-20) \rightarrow n = 2, 20$

7- $t_n = 4n - 14 \rightarrow 4n - 14 < 0 \rightarrow 4n < 14 \rightarrow n < 3.5 \rightarrow 1, 2, 3$

8- $t_n = n^2 - 14n + 40 \rightarrow (n-2)(n-20) \rightarrow n = 2, 20$

9- $t_f = 1 \rightarrow t_f = a + 3d = 1 \rightarrow a = 1 - 3d$

$t_9 = 22 \rightarrow t_9 = a + 8d = 22 \rightarrow 1 - 3d + 8d = 22 \rightarrow 5d = 21 \rightarrow d = 4.2$

$t_{10} = 2 \rightarrow a + 9d = 2 \rightarrow 1 - 3(4.2) = 2 \rightarrow 1 - 12.6 = 2 \rightarrow -11.6 = 2$

10- $t_n = n^2 - 6n + 2 \rightarrow \frac{-b}{2a} = \frac{3}{2} = 1.5 \rightarrow n = 1.5$

11- $t_n = n^2 + 4n + 1 \rightarrow \frac{-b}{2a} = \frac{-4}{2} = -2 \rightarrow n = -2$

$$tn = -9, -1, -1, -1, -1, \dots$$

$\begin{matrix} \xrightarrow{-9} & \xrightarrow{-1} & \xrightarrow{-1} & \xrightarrow{-1} & \xrightarrow{-1} \\ +9 & +1 & +1 & +1 & +1 \end{matrix}$

$$\forall a=1 \rightarrow a=1$$

$$wa+b=-w \rightarrow w+b=-w \rightarrow b=-9$$

$$a+b+c=-1 \rightarrow 1-9+c=-1 \rightarrow c=1$$

$$an^r+bn+c \rightarrow n^r-9n+1$$

$$n=10 \rightarrow 10^r(-9 \times 10)+1 \rightarrow 100-90+1=11$$

$$tn = -9, -1, 1, 1, \dots$$

$\begin{matrix} \xrightarrow{-9} & \xrightarrow{-1} & \xrightarrow{1} & \xrightarrow{1} \\ +9 & +1 & -1 & -1 \end{matrix}$

$$\forall a=1 \quad a=1$$

$$wa+b=w \rightarrow 9+b=w \rightarrow b=-1$$

$$a+b+c=-9 \rightarrow 1-1+c=-9 \rightarrow c=-9$$

$$an^r+bn+c \rightarrow n^r-n-9$$

$$tn = n^r-n-9$$

$$(-\infty, a+1] \cap [a+1, +\infty) \cap \mathbb{R} \rightarrow a+1, a+1 \rightarrow a, w$$

$$1 < an < 100 \rightarrow \frac{1}{a} < n < \frac{100}{a} \rightarrow 1 < n < 19 = 15, 19$$

$$1, 2, 3, 4, 5, \dots$$

$\begin{matrix} \xrightarrow{1} & \xrightarrow{2} & \xrightarrow{3} & \xrightarrow{4} & \xrightarrow{5} \end{matrix}$

$$tn = 1, 2, 3, 4, 5, \dots$$

$$1 < n < 100 \rightarrow n < \frac{100}{1} \rightarrow n < 100$$

$$w_{100} = w \cdot w - 9 = 100$$

$$1) \quad w = 10$$

$$w \cdot w = 100$$

$$100 + 10 + 9 = 119$$

$$n = 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19$$

$$15, 9$$