

الف) $t_n = 3n^2 - 1$

- $n=1 \rightarrow t_1 = 3(1)^2 - 1 \rightarrow 3 - 1 = 2$
- $n=2 \rightarrow t_2 = 3(2)^2 - 1 \rightarrow 12 - 1 = 11$
- $n=3 \rightarrow t_3 = 3(3)^2 - 1 \rightarrow 27 - 1 = 26$
- $n=4 \rightarrow t_4 = 3(4)^2 - 1 \rightarrow 48 - 1 = 47$
- $n=5 \rightarrow t_5 = 3(5)^2 - 1 \rightarrow 75 - 1 = 74$

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ب) $t_n = \frac{n(n+1)}{n+2}$

- $n=1 \rightarrow \frac{1 \times 1 + 1}{1+2} = \frac{2}{3}$
- $n=2 \rightarrow \frac{2 \times 2 + 1}{2+2} = \frac{5}{4}$
- $n=3 \rightarrow \frac{3 \times 3 + 1}{3+2} = \frac{10}{5} = 2$
- $n=4 \rightarrow \frac{4 \times 4 + 1}{4+2} = \frac{17}{6}$
- $n=5 \rightarrow \frac{5 \times 5 + 1}{5+2} = \frac{26}{7}$

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

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

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

ب) $t_n = n^2 - 14n + 40 \rightarrow (n-2)(n-20) \rightarrow \begin{matrix} 2 & 20 \\ + & - \\ - & + \end{matrix} \rightarrow n = 2, 20, 4, 18, 9$ جملته

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

ب) $t_n = n^2 - 14n + 40 \rightarrow (n-2)(n-20) \rightarrow \begin{matrix} 2 & 20 \\ + & - \\ - & + \end{matrix} \rightarrow n = 2, 20, 4, 18, 9$ جملته

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$t_4 = 4 \rightarrow t_4 = a + 3d = 4 \rightarrow a = 4 - 3d$ جملته

$t_9 = 22 \rightarrow t_9 = a + 8d = 22 \rightarrow 4 - 3d + 8d = 22 \rightarrow 5d = 18 \rightarrow d = 3.6 \rightarrow a = -7.8$

$t_{10} = 2 \rightarrow a + 9d = 2 \rightarrow -7.8 + (9 \times 3.6) = 2 \rightarrow t_{10} = 2$

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الف) $t_n = n^2 - 6n + 4 \rightarrow \frac{-b}{2a} = \frac{3}{2} = 1.5 \rightarrow n = 1.5 \rightarrow \min$ جملته

ب) $t_n = n^2 + 4n + 1 \rightarrow \frac{-b}{2a} = \frac{-4}{2} = -2 \rightarrow n = -2 \rightarrow \min$ جملته

ج) $n=1, 1^2 + 4(1) + 1 = 1 + 4 + 1 = 6$

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

$$\forall a = 9 \rightarrow a = 1$$

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

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

$$an^r + bn + c, n^r - 9n + 1$$

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

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

$$\forall a = 9 \quad a = 9$$

$$wa + b = 9 \rightarrow 9 + b = 9 \rightarrow b = 0$$

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

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

$$(-\infty, a+9] \cap [9a+1, +\infty) \cap \mathbb{N} \rightarrow 9a+1, a+9$$

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

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

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

$$1 < n < 100 \rightarrow n < \frac{100}{12} \rightarrow n < \frac{100}{12}$$

$$w_{100} = 99 - 9 = 90$$

$$1) \quad w_{100} = 90$$

$$w_{100} = 90$$

$$90 + 10 + 9 = 109$$

$$n = 99, 98, 97, 96, 95, 94, 93, 92, 91, 90$$

$$109$$