

(سوال ۱)

الف) $t_n = 3n^2 - 1$

$$\begin{array}{c}
 2, 11, 24, 47, 74, 115 \\
 \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\
 3(1)-1 \quad 3(4)-1 \quad 3(9)-1 \quad 3(16)-1 \quad 3(25)-1
 \end{array}$$

ب) $t_n = \frac{2n+1}{n+4}$

$$\begin{array}{c}
 \frac{2}{5}, \frac{4}{9}, 1, \frac{6}{13}, \frac{8}{17} \\
 \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \\
 \frac{2(1)+1}{1+4} \quad \frac{2(2)+1}{2+4} \quad \frac{2(3)+1}{3+4} \quad \frac{2(4)+1}{4+4} \quad \frac{2(5)+1}{5+4}
 \end{array}$$

(سوال ۲)

الف) $t_n = \frac{(-1)^n}{\sqrt{n+4}}$

$$t_n = \frac{(-1)^{13}}{\sqrt{13+4}} = \frac{-1}{\sqrt{17}} = -\frac{1}{\sqrt{17}}$$

$$t_{13} = -\frac{1}{\sqrt{17}}$$

ب) $t_n = 2n - \left[\frac{n}{4}\right]$

$$t_{13} = 2(13) - \left[\frac{13}{4}\right]$$

$$t_{13} = 26 - \left[3\frac{1}{4}\right] = 26 - 3 = 23$$

$$t_{13} = 23$$

(سوال ۳)

الف) $t_n = 2n - 10$

$$2n - 10 < 0$$

$$2n < 10$$

$$n < 5$$

چونکه

ب) $t_n = n^2 - 14n + 40$

$$t_n = (n-4)(n-10)$$

$$\begin{array}{c}
 4 \quad 10 \\
 + \quad - \\
 0 \quad 0
 \end{array}$$

$$9 - 5 + 1 = 5$$

و حاصل می شود

الف) $t_n = 2n - 14$

$$2n - 14 < 0 \quad 2n < 14$$

$$n < 7$$

$$n < 7$$

و حاصل می شود

ب) $t_n = n^2 - 12n + 27$

$$t_n = (n-3)(n-9)$$

$$\begin{array}{c}
 3 \quad 9 \\
 + \quad - \\
 0 \quad 0
 \end{array}$$

$$9 - 3 + 1 = 7$$

و حاصل می شود

(سوال ۵)

$$t_4 = 7$$

$$-a + 3d = 7$$

$$t_9 = 22$$

$$a + 8d = 22$$

$$t_3 = ?$$

$$ad = 1a \rightarrow d = 3$$

$$a + 3(3) = 7$$

$$a = -2$$

$$t_4 = 3(4) - 2 = 10$$

$$t_n = 3(n-1) - 2$$

الف) $an = n^2 - 4n + 2$

(سوال 4)

$$a_n = \frac{-b}{2a} = \frac{4}{2} = 2$$

$$a_2 = (2)^2 - 4(2) + 2 = 4 - 8 + 2 = -2$$

کشیب جمله -2 و $n=2$

ب) $an = n^2 + 4n + 1$

$$a_n = \frac{-b}{2a} = \frac{-4}{2} = -2$$

$$a_1 = 1^2 + 4(1) + 1 = 6$$

میشود با این عبارت یعنی $n=1$ منفی است پس کشیب مقدار برای نزدیکترین

کشیب جمله 6 و $n=1$

$$an = -4, -12, -20, -28, -36, \dots$$

(سوال 14)

$$2a = 2 \quad a = 1$$

$$an = n^2 - 4n + 1$$

$$a_1 = 1 \Rightarrow a_1 = 1(1)^2 + b(1) + c = -4 \Rightarrow \begin{cases} -b - c = 5 \\ 2b + c = 11 \end{cases} \Rightarrow b = -4, c = 1$$

$$a_2 = -4 \Rightarrow a_2 = 1(2)^2 + b(2) + c = -4 \Rightarrow \begin{cases} -b - c = 5 \\ 2b + c = 11 \end{cases} \Rightarrow b = -4, c = 1$$

$$an = n^2 - 4n + 1 \quad 100 - 40 + 1 = 61 \quad \boxed{a_{10} = 61}$$

$$an = -4, -12, -20, -28, \dots$$

$$(2a^2 - an - v)$$

$$2a = 2 \quad a = 1$$

$$a_1 = -4 \Rightarrow a_1 = 1(1)^2 + b(1) + c = -4$$

$$a_2 = -12 \Rightarrow a_2 = 1(2)^2 + b(2) + c = -12 \Rightarrow \begin{cases} -b - c = 16 \\ 2b + c = -9 \end{cases} \Rightarrow b = -1, c = -15$$

$$(-\infty, a+f] \cap [ra+1, +\infty)$$

$$[a+f, 2a+1]$$

مقادیر

$$2a+1 > a+f \quad \boxed{a > f}$$

(سوال 19)

$$3, 9, 27, 81, \dots, 99 \rightarrow 432$$

الف)

(سوال 10)

$$2, 10, 18, \dots, 90, 98, 100 \rightarrow 675$$

$$1, 4, 9, 16, 25, 36, 49, 64, 81, 100$$

$$100 \rightarrow 675$$

$$3^3 + 2^3 - 9 = 27 + 8 - 9 = 26$$