

(الف) $t_n = 3n^2 - 1$

$$t_1 = 3(1)^2 - 1 = 3 - 1 = 2$$

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

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

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

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

(۱)

(ب) $t_n = \frac{2n+1}{n+2}$

$$t_1 = \frac{2(1)+1}{1+2} = \frac{3}{3} = 1$$

$$t_2 = \frac{2(2)+1}{2+2} = \frac{5}{4}$$

$$t_3 = \frac{2(3)+1}{3+2} = \frac{7}{5}$$

$$t_4 = \frac{2(4)+1}{4+2} = \frac{9}{6} = \frac{3}{2}$$

$$t_5 = \frac{2(5)+1}{5+2} = \frac{11}{7}$$

$$t_6 = \frac{2(6)+1}{6+2} = \frac{13}{8}$$

(الف) $t_n = \frac{(-1)^n}{n+3}$

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

$$= \frac{-1}{16} = -\frac{1}{16} \Rightarrow$$

$$t_{13} = -\frac{1}{16}$$

(۱۱۵)

(ب) $t_n = 2n - \left\lfloor \frac{n}{4} \right\rfloor$

$$\Rightarrow t_{13} = 2(13) - \left\lfloor \frac{13}{4} \right\rfloor = 26 - 3 = 23$$

$$\Rightarrow 26 - 3 = 23$$

$$\Rightarrow 26 - 3 = 23$$

$$\Rightarrow t_{13} = 23$$

$$\left\lfloor \frac{13}{4} \right\rfloor = 3$$

$$3$$

$$3$$

$$23$$

(الف) $t_n = 2n - 10$

$$2n - 10 < 0 \Rightarrow 2(n - 5) < 0$$

$$1 < n < 5$$

جدول منفی دارد

(۳)

$$2n - 10 = (2 - 1) + 1 = 2$$

(ب) $t_n = n^2 - 14n + 40$

$$\frac{n^2 - 14n + 40}{(n - 4)(n - 10)} < 0$$

$$+ \quad - \quad +$$

$$0 < n < 4$$

جدول منفی دارد از جمله ۱ تا ۳

این رابطه منفی است.

$$\Rightarrow 2n - 10 = (2 - 1) + 1 = 2$$

(الف) $t_n = 2n - 14$

$$\Rightarrow 2n - 14 \leq 0 \Rightarrow 2(n - 7) \leq 0$$

$$1 < n \leq 7$$

$$+ \quad - \quad +$$

جدول مثبت دارد

(۴)

$$1 < n \leq 7 \Rightarrow (7 - 1) + 1 = 7$$

(ب) $t_n = n^2 - 14n + 40$

$$= (n - 4)(n - 10) \leq 0 \Rightarrow$$

$$+ \quad - \quad +$$

$$4 < n < 10$$

جدول مثبت دارد از جمله ۵ تا ۹

جدول مثبت است.

$$4 < n < 10 \Rightarrow (10 - 4) + 1 = 7$$

$$\begin{cases} 4a + b = 7 \\ 9a + b = 22 \end{cases} \quad t_3 = ?$$

$$\begin{cases} -4a - b = -7 \\ 9a + b = 22 \end{cases}$$

$$\xrightarrow{\text{جایگزینی}} 9(3) + b = 22 \Rightarrow b = 22 - 27 = -5$$

$$\frac{5a}{5} = \frac{1a}{5} \Rightarrow a = 3$$

خط نهایی فصل (۵)

$$t_n = 3n - 5$$

$$\Rightarrow t_3 = 3(3) - 5 = 4$$

$$\Rightarrow t_3 = 4$$

(۵)

(الف) $t_n = n^2 - 9n + 2$

$$\Rightarrow \begin{cases} -b = \frac{9}{2} = 4.5 \\ 9 - 9(3) + 2 = -14 \end{cases}$$

$$\frac{-b}{2a} = \frac{9}{2} = 4.5$$

$$\Rightarrow 9 - 9(3) + 2 = -14$$

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(۱۱۵)

$$9 - 18 + 2 = -7$$

$$\Rightarrow 9 - 18 + 2 = -7$$

n حداقل باید ۱ باشد پس طبق جدول ۶ است

(ب) $t_n = n^2 + 4n + 1$

$$\Rightarrow \begin{cases} -b = \frac{-4}{2} = -2 \\ 4 - 4(1) + 1 = -3 \end{cases}$$

$$\Rightarrow 4 - 4(1) + 1 = -3$$

$$\Rightarrow 4 - 4(1) + 1 = -3$$

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$$\Rightarrow 4 - 4(1) + 1 = -3$$

(۱۱۵)

$t_n = -8, -7, -6, -5, -4, \dots$
 $\begin{matrix} -8 & -7 & -6 & -5 & -4 \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ +1 & +1 & +1 & +1 & +1 \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ +2 & +2 & +2 & +2 & +2 \end{matrix}$
 $\Rightarrow \boxed{b=1}$

$t_n = an^2 + bn + c$
 $t_{10} = ?$

5

$t_n = n^2 + bn + 1 \Rightarrow -8 = 1 + b + 1 \Rightarrow \boxed{b = -4}$
 $t_n = n^2 - 4n + 1 \Rightarrow t_{10} =$
 $(10)^2 - 4(10) + 1 = 100 - 40 + 1 = 61 \Rightarrow \boxed{t_{10} = 61}$

$t_n = -4, -1, 1, 4, \dots$
 $\begin{matrix} -4 & -1 & 1 & 4 \\ \uparrow & \uparrow & \uparrow & \uparrow \\ +1 & +1 & +1 & +1 \\ \uparrow & \uparrow & \uparrow & \uparrow \\ +2 & +2 & +2 & +2 \end{matrix}$

$t_n = an^2 + bn + c$
 $t_{10} = ?$

5

$t_n = 2n^2 + bn - 4 \Rightarrow -4 = 2(1)^2 + b - 4 \Rightarrow \boxed{b = -1}$
 $t_n = 2n^2 - 1n - 4$

$(-\infty, a+\epsilon] \cap [x_{a+1}, \infty) = \emptyset$



$a_{n+1} = ?$

0.2

$x_{a+1} < a + \epsilon$
 $x_{a+1} > a + \epsilon \rightarrow a > x$

$x_{a+1} > a + \epsilon \rightarrow a > x$

$\left\lceil \frac{100}{4} \right\rceil = 25$

$\left\lceil \frac{100}{4.44} \right\rceil = 23$

1.2

$\left\lceil \frac{100}{4} \right\rceil = 25$

$\left\lceil \frac{100}{4} \right\rceil + \left\lceil \frac{100}{4} \right\rceil = 50$