

امین خدویش دهم تجربی الف

۱۸، ۵

الف) $t_n = 3n^2 - 1 \Rightarrow t_1 = 2 / t_2 = 11 / t_3 = 24 / t_4 = 47 / t_5 = 114$

ب) $t_n = \frac{3n+1}{n+2} \Rightarrow t_1 = \frac{4}{3} / t_2 = \frac{5}{4} / t_3 = 1 / t_4 = \frac{7}{8} / t_5 = \frac{11}{9}$

سوال یک

سوال دو

الف) $\frac{(-1)^n}{\sqrt{13+3^n}} = \frac{-1}{13} \Rightarrow -\frac{1}{13}$

ب) $14 - [3n] \Rightarrow 23$

الف) $2n-1 < 0 \Rightarrow n < \frac{1}{2} \Rightarrow n=1, 2, 3, 4 \quad n^2-14n+4 \leq 0 \Rightarrow (n-4)(n-1) < 0$

$\frac{4-1}{4-0} \Rightarrow (4, 1) \Rightarrow n=2, 3, 4, 5, 6, 7, 8, 9$

سوال سه

الف) $2n-14 < 0 \Rightarrow n < 7 \Rightarrow n=0, 1, 2, 3, 4, 5, 6, 7$

ب) $n^2-14n+4 < 0 \Rightarrow (n-7)(n-1) < 0 \Rightarrow \frac{7-1}{7-0} \Rightarrow [1, 7] \Rightarrow n=2, 3, 4, 5, 6, 7, 8, 9$

سوال چهار

$t_n = an + b \Rightarrow t_n = 3n - 5$
 $t_1 \Rightarrow 5a + b = 2$
 $t_9 \Rightarrow 9a + b = 22 \Rightarrow \begin{cases} 5a + b = 2 \\ 9a + b = 22 \end{cases} \Rightarrow \begin{cases} 5a + b = 2 \\ 4a = 20 \end{cases} \Rightarrow \begin{cases} a = 5 \\ b = -23 \end{cases}$

$\Rightarrow t_3 = 9 - 5 = 4$
 روش اول

سوال پنج

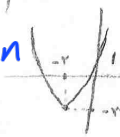
$\begin{cases} t_1 = 5 \\ t_9 = 22 \end{cases} \Rightarrow \begin{cases} a + b = 5 \\ 9a + b = 22 \end{cases} \Rightarrow \begin{cases} a + b = 5 \\ -8a = -17 \end{cases} \Rightarrow \begin{cases} a = \frac{17}{8} \\ b = 5 - \frac{17}{8} = \frac{23}{8} \end{cases}$

ext $\begin{cases} m = \frac{-b}{2a} = \frac{4}{2} = 2 \\ g = \frac{-b}{2a} = \frac{-17}{2} = -8.5 \end{cases}$



سوال شش

ext $\begin{cases} m = \frac{-b}{2a} = \frac{-2}{2} = -1 \\ g = \frac{-b}{2a} = \frac{-3}{2} = -1.5 \end{cases}$



$n=1 \Rightarrow t_1 = 4$
 min

جدول مقادیر
 $\begin{matrix} +1 & -4 & -9 & -16 & -25 & -36 & -49 & -64 & -81 & -100 \\ -8 & -3 & +1 & +8 & +27 & +64 & +125 & +216 & +343 & +512 \end{matrix}$

$2 = 2a \Rightarrow a = 1$

$an^2 + bn + c$

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

سوال هفت

$n^2 - 4n + 1 \Rightarrow n=6 \Rightarrow 1 - 4 + 1 \rightarrow 4$

$t_n = an^2 + bn + c \Rightarrow 2n^2 + n - 5$

$2 = 2a \Rightarrow a = 1$

$t_n = 2n^2 - n - 5$

سوال هشت

if $n=1 \Rightarrow 1 + b - 5 = -4 \Rightarrow b = 0$

سؤال 9

① $\begin{array}{|c|} \hline a+t < ra+1 < w < a \\ \hline \end{array} \Rightarrow a = [w, \infty +)$ ✓

② $\begin{array}{|c|} \hline a+t = ra+1 \rightarrow a = w \\ \hline \end{array}$

الف) $3, 4, 4, \dots, 44 \Rightarrow \frac{n}{r} (tn+t_1) \Rightarrow \frac{3 \times (44+3)}{1} = 148$
 $n = \frac{44-3}{1} + 1 = 42$ ✓

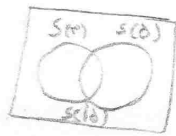
سؤال 10

ب) $5, 10, 15, \dots, 100 \Rightarrow \frac{n}{r} (tn+t_1) \Rightarrow \frac{5 \times (100+5)}{5} = 105$
 $n = \frac{100-5}{5} + 1 = 20$ ✓

(10)

ج) $15, 20, 25, \dots, 90 \Rightarrow \frac{n}{r} (tn+t_1) \Rightarrow \frac{5 \times (90+15)}{5} = 105$

د) $A \cap B \rightarrow \text{مختبر 15} \rightarrow \left[\frac{100}{15} \right] = 6$



$\rightarrow S(A) \cup S(B) = S(A) + S(B) - S(A \cap B) \Rightarrow (148 + 105) - 105 = 148$
 $n(A \cup B) = n(A) + n(B) - n(A \cap B)$ ✓

$33 + 20 - 4 = 49$