

سوال ۱:

الف) $t_n = 2n^2 - 1 = 2, 11, 24, 47, 74$

$2 \times 1^2 - 1 = 2$ $2 \times 4^2 - 1 = 47$
 $2 \times 2^2 - 1 = 11$ $2 \times 3^2 - 1 = 24$
 $2 \times 3^2 - 1 = 24$

ب) $t_n = \frac{2n+1}{n+4} = \frac{2}{5}, \frac{5}{4}, 1, \frac{9}{5}, \frac{11}{4}$

$t_1 = \frac{2 \times 1 + 1}{1 + 4} = \frac{2}{5}$ $t_4 = \frac{2 \times 4 + 1}{4 + 4} = \frac{5}{4}$ $t_3 = \frac{2 \times 3 + 1}{3 + 4} = \frac{7}{7} = 1$ $t_5 = \frac{2 \times 5 + 1}{5 + 4} = \frac{11}{9}$

$t_2 = \frac{2 \times 2 + 1}{2 + 4} = \frac{5}{6}$

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

سوال ۲:

ب) $t_n = 2n - \left[\frac{n}{4} \right] = t_{13} = 2 \times 13 - \left[\frac{13}{4} \right] = 24 - 3 = 21$

الف) $t_n = 2n - 10 \rightarrow$

n	5
-	10
+	

سوال ۳:

ب) $t_n = n^2 - 14n + 40 \rightarrow t_n = (n-10)(n-4)$

n	4	10
+		-
	-	+

$10 - 4 + 1 = 7$ ج

الف) $t_n = 2n - 14 =$

n	7
-	14
+	

سوال ۴:

$7 - 14 + 1 = -6$

ب) $t_n = n^2 - 12n + 27 \rightarrow t_n = (n-9)(n-3)$

n	3	9
+		-
	-	+

$9 - 3 + 1 = 7$

$t_9 = 0$

$t_3 = ?$

$\frac{27 - 0}{9 - 3} = \frac{27}{6} = 4.5$

$t_3 = 2 \times 3 - 2 = 4$

سوال ۵:

$2n - 2$

$2n - 2$

سوال ۶:

الف) $t_n = n^2 - 4n + 2 \rightarrow t_2 = 9 - 11 + 2 = -7$ که صحیح است

$t_1 = 1 - 4 + 2 = -2$ $t_2 = 4 - 11 + 2 = -5$ $t_3 = 9 - 11 + 2 = -1$ $t_4 = 16 - 24 + 2 = -6$
 $t_5 = 25 - 30 + 2 = -3$

ب) $t_n = n^2 + 4n + 1 \rightarrow 1$ $t_1 = 1 + 4 + 1 = 6$

$t_n = -4, -7, -1, -7, -4, \dots$
 $\begin{matrix} & \nearrow & \nearrow & \nearrow & \nearrow & \nearrow & \nearrow & \nearrow & \nearrow \\ -4 & -7 & -1 & -7 & -4 & & & & \\ \nwarrow & \nwarrow & \nwarrow & \nwarrow & \nwarrow & & & & \\ & +1 & +2 & +3 & +4 & +5 & +6 & +7 & +8 \end{matrix}$
 $\begin{matrix} & \nearrow & \nearrow & \nearrow & \nearrow & \nearrow & \nearrow & \nearrow & \nearrow \\ & +2 & +2 & +2 & +2 & +2 & +2 & +2 & +2 \end{matrix}$

سوال ۷:

~~$t_n = -4, -7, -1, -7, -4, 1, 8, 17, 28, 41$~~

$t_n = -4, -1, 8, 21$
 $\begin{matrix} & \nearrow & \nearrow & \nearrow & \nearrow \\ -4 & -1 & 8 & 21 \\ \nwarrow & \nwarrow & \nwarrow & \nwarrow \\ & +1 & +9 & +13 \\ & & +4 & +4 & +4 \end{matrix}$

$t = 2a \rightarrow a = 2$

سوال ۸:

$2n^2 + (-1n) - 7$

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$t_1 = 4 + b + c = -4 \rightarrow b + c = -8$
 $t_2 = 16 + 2b + c = -1 \rightarrow 2b + c = -17$ } $b = -1$

$(-\infty, a+4], [2a+1, +\infty)$ متناهی باشد حد a بیابید.

سوال ۹:

$\rightarrow$ یا برابر $2a+1 = a+4 = 3$ یا $a=2$
 $\text{and } D \neq [2, +\infty)$

$A = \{1, 2, 3, \dots, 100\}$

سوال ۱۰:

الف) $\rightarrow 2n \rightarrow n(2n) \rightarrow \left[\frac{100}{2} \right] = 50$ A B

ب) $\rightarrow 3n \rightarrow n(3n) \rightarrow \frac{100}{3} = 33$ C $\rightarrow 19$

ج) $\rightarrow 2n \times 3n \rightarrow$ جمله های مشترک $6n$ $\left[\frac{100}{6} \right] = 16$

د) $\rightarrow n(B \cup C) = n(B) \cup n(C) - n(B \cap C)$

$= 50 + 19 - 16 = 53$