باران [illegible] / گروه [illegible]

۱)

الف) $t_n = 3n^2 - 1$ $t_1 = 3\times1 - 1 = 2$

$t_2 = 3\times4 - 1 = 11$ $t_3 = 3\times9 - 1 = 26$

$2,\ 11,\ 26,\ 47,\ 74$

$+9 \quad +15 \quad +21 \quad +27$

$+6 \quad +6 \quad +6$

ب) $t_n = \frac{2n+1}{n+4}$ $t_1 = \frac{3}{5}$ $t_2 = \frac{5}{6}$

$t_3 = 1$ $t_4 = \frac{9}{8}$ $t_5 = \frac{11}{9}$

$\frac{3}{5},\ \frac{5}{6},\ 1,\ \frac{9}{8},\ \frac{11}{9}$

۲)

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

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

ب) $t_n = 2n - [\frac{n}{4}] \Rightarrow 2\times13 - [\frac{13}{4}] \Rightarrow$ ($3\frac{1}{4}$)

$2\times13 - 2 = 26 - 2 = 24$

۳)

الف) $t_n = 2n - 10$ $2n - 10 < 0$

$2n < 10$ $n < 5$

$n = 1, 2, 3, 4$

۴ جمله

ب) $t_n = n^2 - 14n + 40 \Rightarrow n^2 - 14n + 40 < 0$

$(n-4)(n-10) < 0$

4		10	
+	−		+

$n \in (4, 10)$

$n = 5, 6, 7, 8, 9$

۵ جمله

۴)

الف) $t_n = 2n - 16$ $2n - 16 \le 0$

$2n \le 16$ $n \le 8$

۸ جمله

ب) $t_n = n^2 - 12n + 27 \Rightarrow n^2 - 12n + 27 \le 0$

$(n-9)(n-3) \le 0$

3		9	
+	−		+

$n \in [3, 9]$

۷ جمله

۵)

$t_4 = 7$

$t_9 = 22$

$t_9 = t_4 + 5d \Rightarrow 22 = 7 + 5d$ $5d = 15$ $d = 3$

$t_4 = t_3 + d \Rightarrow 7 = t_3 + 3$ $t_3 = 4$

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$f(n)=n^2+4n+1 \Rightarrow y=x^2+4x+1$ (۱

$y=(x+2)^2-3 \qquad -(x+2)^2=-3-y \Rightarrow$

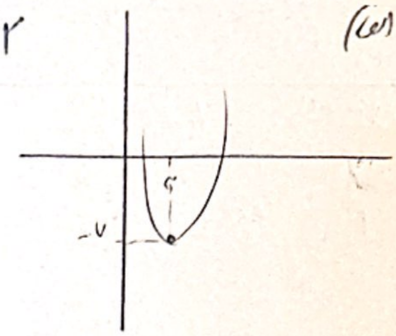
$(x+2)^2=y+3 \qquad y+3\geq 0$

$y\geq -3$ $\qquad$ -3

$f(n)=n^2-6n+2$ (ب

$-\frac{b}{2a}=\frac{6}{2}=3$

-7



-7

$f(n)=1,-4,-7,-8,-7,-4$

$-5,\ -3,\ -1,\ +1,\ +3$

$+2,\ +2,\ +2,\ +2$

$2a=2 \qquad a=1 \qquad c=1$

$a_n=n^2+bn+1 \Rightarrow a_2=4+2b+1=-7$

$2b=-12 \qquad b=-6$

$a_{10}=(10)^2-6\times 10+1=100-60+1=41$

$f(n)=-7,-6,-1,8,21$

$+1,\ +5,\ +9,\ +13$

$+4,\ +4,\ +4$

$2a=4 \qquad a=2 \qquad c=-7$

$2n^2+bn-7=a_n \qquad a_1=2+b-7=-6$

$b-5=-6 \qquad b=-1$

$a_n=2n^2-n-7$

$a+4\leq 2a+1 \Rightarrow \qquad a\geq 3$

الف) $3, 6, 9, 12, \ldots$

$a_n=3n$

$3n\leq 100$

$n\leq \frac{100}{3}$

$n\leq 33$

33

ب) $5, 10, 15, 20, \ldots$

$a_n=5n$

$5n\leq 100$

$n\leq 20$

20

ج) $5, 10, 15, 20, 25, 30, \ldots, 100$

$3, 6, 9, 12, 15, 18, 21, 24, 27, 30$

$15, 30, 45, \ldots$

$a_n=15n$

$15n\leq 100$

$n\leq \frac{100}{15}$

$n\leq 6$

6

د) $33+20=$

53

$53-6$ مشترک $=47$