subject

Year Month Date

۲۵

آرمینا کبیری گروه دهم تجربی c

۱- الف) $t_n: 5, 9, 13, 17$ ($+4$) $t_n = 5+(n-1)4 = \boxed{4n+1}$

ب) $t_{10} = 4\times10+1 = \boxed{41}$

۲- الف) $t_n = 6, 10, 14, 18, \ldots$ ($+4$) $t_n = 4n+2$, $t_{10} = 40+2 = 42$ $S_{10} = \frac{10}{2}(t_1+t_{10}) = 5(6+42) = \boxed{240}$

ب) $t_{29}+t_{30}+t_{31}+t_{32} \Rightarrow t_{30}+t_{31} = t_{29}+t_{32} = 122+126 = 248$

$\to t_{29}+t_{30}+t_{31}+t_{32} = 2\times248 = \boxed{496}$

۳- $t_n = 1+\sqrt{3}, 2, 3-\sqrt{3}$ ($+1-\sqrt{3}$) $t_{25}-t_{23} = 2d = \boxed{2-2\sqrt{3}}$

۴- $6\times5^{2n} = 5^y + 5^{2n} \to 5^y = 5\times5^{2n} = 5^{2n+1}$

$n+y=4 \to 3n+1=4 \to n=1$, $y=3$; $y=2n+1$ $\boxed{ny=3}$

۵- $2(2n-1) = 8n-4 \to 4n=2 \to n=\frac{1}{2}$

$a_n = -3, 0, 3 \to a_n = 3n-6$ $\boxed{a_4 = 12-6 = 6}$

۶- جملات مشترک $c_n: 5, 11, 17, \ldots$ $c_n = 6n-1 \to 6n-1 \le 41$, $n \le 7 \to$ $\boxed{7 \text{ جمله}}$

$a_n = 2n+1$ $a_{20} = 41$

$b_n = 3n-1$ $b_{20} = 59$

۷- $a_1+a_2+a_3 = 3a_2 = 21 \to a_2 = 7$ $a+d=7$

$a_1+a_4+a_5 = 3a_4 = 105 \to a_4 = 35$ $a+3d = 35$

$d=28, a=-21$

$a_3-a_2+a_1 = a+d$

$\frac{a+d}{a} = \frac{7}{-21} = \boxed{\frac{-1}{3}}$

۸- $a_1+a_2+a_3 = 15 \to 3a+3d = 15 \xrightarrow{\div3} a+d = 5$ ①

$a_4+a_5 = 25 \to 2a+7d = 25$

طرفین① $2a+2d = 10$

$5d = 15 \to d = 3$, $a = 2$ $a_{10} = a+9d = 2+27 = \boxed{29}$

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$$\frac{9}{2}(2a_1+8d) = 9\left(\frac{3}{2}(2a_1+2d)\right) \quad \text{-9}$$

$$9a_1+36d = 27a_1+27d \rightarrow 9d = 18a \rightarrow a = \frac{1}{2}d$$

$$\frac{a_{20}}{a_7} = \frac{a_1+19d}{a_1+6d} = \frac{\frac{39}{2}d}{\frac{13}{2}d} = \frac{39}{13} = 3 \quad (3)$$

$$\left.\begin{matrix} a_1 = 11 \\ a_7 = a_1+6d = 35 \end{matrix}\right\} \rightarrow 6d = 24 \rightarrow d = 4 \qquad a_4 = a_1+3d = 11+12 = 23 \quad \text{-10}$$

5

$$b_n = 38, \ldots, 13 \rightarrow b_4 = 23 \qquad 38+3d = 23 \rightarrow d = -5$$

$$d = \frac{13-38}{n+1} = -5 \rightarrow n+1 = 5 \rightarrow \boxed{n = 4} \rightarrow \text{جمله } 4$$