نام و نام خانوادگی ...پویا توکلی... پاسخنامه تشریحی تکلیف شماره ۱۳ ... کلاس دهم ریاضی ...

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$3d = a_4 - a_1 = 61 - 40 = 21 \Rightarrow d = 7 \Rightarrow a_n = 7n + 33$

$209 = 7n + 33 \Rightarrow 7n = 176$

$\Rightarrow n = 25$

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$101, 102, 103, 104, 105, 106, 107, 108, \dots$ $\quad d = 7$

$a_n = 7n + 94$

$7n + 94 \leq 999$

$\Rightarrow 7n \leq 905$

$\Rightarrow 1 \leq n \leq 129$

$\Rightarrow 129$ عدد

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$a_{n+1} + a_{n+2} + a_{n+3} = -6n + 12 \Rightarrow a_1 + a_2 + a_3 = 12 = 3a_2 \Rightarrow a_2 = 4$

$a_2 + a_3 + a_4 = 3a_2 + 3d = -6 \Rightarrow 3d = -6$

$\Rightarrow d = -2$

$\Rightarrow a_1 = 6$

$\Rightarrow a_n = -2n + 8$

$a_{17} + a_8 = 2a_1 + 23d = 12 - 46 = -34$

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$a_3 = 2^2 - 1 = 3 \quad a_3 + a_{13} = a_n + a_8 \Rightarrow 2^n + 2^{2n} - 4 = \dots$

$a_8 = 2^3 + 1 = 8$

$\Rightarrow 2^{2n} + 2^n - 2^{n+2} = 4 \Rightarrow 2^n(1 + 2^n - 4) = 4$

$a_{13} = 2^4 - 3 = 13 \Rightarrow 2^n = 4 \Rightarrow n = 2$

$\Rightarrow a_3 + a_8 + a_{13} = 3 + 8 + 13 = 24$

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$a_{12} - a_{10} = 2d = 5 \Rightarrow d = \frac{5}{2} \quad a_{10} + a_{12} = 25 = 2a_1 + 20d \Rightarrow 2a_1 = -25$

$\Rightarrow a_1 = -\frac{25}{2}$

$a_{21} = a_1 + 20d = -\frac{25}{2} + 50 = \frac{75}{2}$

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$5\frac{(a_1+a_5)}{2} = 5(a_1+2d) = \frac{1}{3}\times 10\frac{(a_4+a_{10})}{2} = \frac{1}{3}\times 5(a_1+7d)$ ۲ $\Rightarrow 5(a_1+2d) = \frac{5(a_1+7d)}{3} \Rightarrow a_1+2d = \frac{1}{3}(a_1+7d) \xrightarrow{\times 3} 3a_1+6d = a_1+7d$ $\Rightarrow 2a_1 = d \Rightarrow \frac{a_2}{a_1} = \frac{a_1+d}{a_1} = \frac{3a_1}{a_1} = 3$ ✓	۶
$t_n = t_{n-3} + 15 \Rightarrow 3d = 15 \Rightarrow d = 5$ ۲ $\frac{(t_9 - t_5)(t_9 + t_5)}{t_7} \Rightarrow \frac{(4d)(2t_1+12d)}{t_1+6d} = \frac{2t_7 \cdot 4d}{t_7} = 8d = 40$ ✓	۷
$t_1 = 2 - 12\sqrt{3}$ ۲ $t_{14} = 2 + \sqrt{3} = t_1 + 13d = 2 - 12\sqrt{3} + 13d \Rightarrow 13\sqrt{3} = 13d \Rightarrow d = \sqrt{3}$ ✓	۸
$t_1 = 2 \quad \frac{t_{n+1}}{+9} = 11 \quad \frac{t_{3n-2}}{+91} = 32$ $\quad d = \frac{t_{3n-2} - t_1}{3n-3+1} = \frac{30}{3n-2}$ $nd = 9 \Rightarrow \frac{30n}{3n-2} = 9 \Rightarrow 30n = 27n - 18 \Rightarrow 3n = 18 \Rightarrow n = 6$ ✓ ۲	۹
$a_n + a_{n+4} = a_3 + a_{17} \Rightarrow n + n + 4 = 20 \Rightarrow n = 8$ ✓ $a_n = 3a_{\frac{n}{2}} \Rightarrow a_8 = 3a_4 \Rightarrow 4d = 2a_4 = 2a_1 + 6d \Rightarrow 2a_1 = -2d \Rightarrow a_1 = -d$ $\Rightarrow a_n = a_1 + (n-1)(-a_1) \quad a_1 + (n-1)(-a_1) = 0 \Rightarrow n - 1 = 1 \Rightarrow n = 2$ ✓ ۲	۱۰