نام و نام خانوادگی محمدطاها جهستانی‌پور پاسخنامه تشریحی تکلیف شماره .... کلاس دهم تجربی B ......

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$d = \frac{61-40}{4-1} = \frac{21}{3} = \boxed{7}$

$t_n = t_1 + (n-1)d \Rightarrow 40 + (n-1)7 \Rightarrow 40 + 7n - 7 = 208 \Rightarrow 7n = 175$

$\boxed{n = 25}$

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۱۰۱ ، ۱۰۸ و ۱۱۵ و ... و ۹۹۷ اعداد ۳ رقمی که بر ۷ باقی‌مانده ۳ دارد

$\frac{997-101}{7} + 1 = 129$

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$3an + 6d = -6n + 12 \Rightarrow a = -2$, $d = +2$ $\qquad t_n = -2n + 2$

$t_n = a_n + d \Rightarrow a_{n+1} + a_{n+2} + a_{n+3} = an + an + an + d + 2d = 3an + 3d$

$a_{17} = (-2 \times 17) + 2 = -32$

$a_8 = (-2 \times 8) + 2 = -14$

$-32 - 14 = -46$

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$t_3 = 2^x - 1 = a_1 + 2d$ و $t_8 = 2^{x+1} = a_1 + 7d$ و $t_{13} = 2^{2x} - 3 = a_1 + 12d$

$\Rightarrow t_3 + t_{13} = (t_8 + t_8) \Rightarrow 2(2^{x+1}) = 2^{x+2}$

$2^{x} - 1 + 2^{2x} - 3 = 2^{x+2} \Rightarrow 2^x + 2^{2x} - 4 = 2^{x+2} \Rightarrow 2^x + 2^{2x} - 2^{x+2} = 4$; $2^x(2^x - 3) = 4$

$2^x(1 + 2^x - 4) = 4$

$\Rightarrow 2^x = 4 \Rightarrow x = 2$

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$a_{12} - a_{10} = 2d = 5 \Rightarrow d = \frac{5}{2}$

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

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

$S_1 = 5\,\frac{a_1+a_5}{2} = 5(a_1+2d)$
$S_2 = 5\,\frac{a_6+a_{10}}{2} = 5(a_1+7d)$ $\Big\} \Rightarrow S_1 = \frac{1}{3}S_2 \Rightarrow 5(a_1+2d) = \frac{5}{3}(a_1+7d)$

$a_1+2d = \frac{1}{3}(a_1+7d) \Rightarrow 3a_1+6d = a_1+7d \Rightarrow 2a_1 = d$

$a_2 = a_1+d = 3a_1$

$\frac{a_2}{a_1} = \frac{3a_1}{a_1} = 3$ ۶

$t_n = t_{n-3d}+15$ $\quad t_4 = t_1+15,\ t_4 = t_1+3d \Rightarrow d=5$

$3d = 15$ $\quad 4d = 20$

$(t_9+t_5)(t_9-t_5) = 1400$ $\quad 2t_1+12d = 70$ ۷

$t_7 = t_1+6d = 35 \Rightarrow \frac{1400}{35} = 40$

$t_1 = 5 \Rightarrow t_3 = 15 \Rightarrow t_3 = t_1+2d \Rightarrow 15 = t_1+10 \Rightarrow t_1 = 5$

$t_1 = 2(1-6\sqrt{3}) = 2-12\sqrt{3}$ $\quad t_{14} = t_1+13d \Rightarrow 2+\sqrt{3} = 2-12\sqrt{3}+13d$

$= 13\sqrt{3},\ d = \sqrt{3}$

$t_{14} = 2+\sqrt{3}$ ۸

$d = \frac{32-2}{4n-2} = \frac{30}{4n-2}$ | $t_1 = 2$ و $4n-2$ تعداد واسطه و $t_n = 32$

$t_{n+1} = t_1+(n+1-1)d \Rightarrow nd = 9$ $\quad nd = \frac{30n}{4n-2} = 9 \Rightarrow 30n = 36n-18$

$6n = 18 \Rightarrow n = 3$

$a_n + a_{n+4} = a_3 + a_{17}$ $\quad (a+(n-1)d) + ((a+(n+3)d)) = (a+2d)+(a+16d)$

$(a+nd-d)+(a+nd+3d) = (a+2d)+(a+16d)$

$2a+(2n+2)d = 2a+18d \Rightarrow (2n+2)d = 18d$ ۱۰

$\Rightarrow 2n+2 = 18 \Rightarrow 2n = 16 \Rightarrow n = 8$