نام و نام خانوادگی ......آنیا طارمی...... پاسخنامه تشریحی تکلیف شماره ...۱۳... کلاس ..دخترانه دهم A...

$a_1 = 40$ $a_4 = a + 3d = 61$ $a_n = 208$ $a_4 = 40 + 3d = 61 \rightarrow 3d = 21 \rightarrow d = 7$ $a_n = 40 + (n-1)d = 208$ $7n - 7 = 168$ $7n = 175$ $\boxed{n = 25}$	۱
عدد سه رقمی که تقسیم بر ۷ باقی مانده ۳ دارد؟ $101, \dots, 997$ تعداد $= \frac{997 - 101}{7} + 1 = \boxed{129}$ $100 \leq 7n + 3 \leq 999$ $97 \leq 7n \leq 996$ $13.- \leq n \leq 142.-$ $14, \dots 142$ $142 - 14 + 1 = \boxed{129}$	۲
$a_{n+1} + a_{n+2} + a_{n+3} = -6n + 12$ $\quad a_{17} + a_8 = ?$ $a_1 + nd + a_1 + (n+1)d + a_1 + (n+2)d = 3a_1 + (3n+3)d = -6n + 12$ $\Rightarrow 3d = -6 \rightarrow d = -2$ / $3a_1 + 3d = 12 \rightarrow 3a_1 + 3 \times -2 = 12 \rightarrow 3a_1 = 18$ و $\boxed{a_1 = 6}$ $a_8 + a_{17} = [6 + 7 \times (-2)] + (6 + 16 \times (-2)) = -8 - 26 = \boxed{-34}$	۳
$2^x - 1$ و 2^{x+1} و $2^{2x} - 4$ $\downarrow a_3, \quad a_8, \quad a_{13}$ $\downarrow 3, \quad 8, \quad 13$ $a_3 + a_8 + a_{13} = 3 + 8 + 13 = \boxed{24}$ $a_8 + a_8 = a_{13} + a_3$ $2^{x+1} + 2^{x+1} = 2^{2x} - 4 + 2^x - 1 = 2^{2x} + 2^x - 4$ $2 \times 2^{x+1} = 2^{2x} + 2^x - 4$ $2^{x+2} - 2^{2x} - 2^x = -4$ $2^x(2^2 - 2^x - 1) = -4$ $2^x(3 - 2^x) = -4 \longrightarrow \boxed{x = 2}$	۴
$a_{12} - a_{10} = 5$ $a_{10} + a_{12} = 25$ $a + 11d - a - 9d = 5 \longrightarrow 2d = 5 \quad d = \frac{5}{2}$ $a + 11d + a + 9d = 25$ $2a + 20d = 25$ $2a = 25 - 50 = -25 \quad a = -12.5$ $a_{21} = a + 20d = -12.5 + 20 \times \frac{5}{2} = \boxed{37.5}$	۵

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$a_1 + a_2 + \cdots + a_5 = \frac{1}{3}(a_4 + a_7 + \cdots + a_{10})$

$\frac{a_2}{a_1} = ?$

$5x = \frac{1}{3}(x + 3d + x + d + \cdots + x + 7d)$

$5x = \frac{1}{3}(5x + 25d)$

$15x = 5x + 25d$

$10x = 25d$

$x = 2.5d$

$\frac{a_2}{a_1} = \frac{x-d}{x-2d} = \frac{2.5d - d}{2.5d - 2d} = \frac{1.5d}{0.5d} = \frac{3}{1} = \sqrt{3}$

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$t_n = t_{n-2} + 15$

$\frac{t_9^2 - t_5^2}{t_7} = ?$ برابر ۴۰

$\hookrightarrow t_1 + (n-1)d = t_1 + (n-2)d + 15 \longrightarrow 2d = 15 \rightarrow d = 5$

$t_5 = t_1 + 4d = t_1 + 20$

$t_7 = t_1 + 6d = t_1 + 30$

$t_9 = t_1 + 8d = t_1 + 40$

$t_9^2 - t_5^2 = (t_9 - t_5)(t_9 + t_5) = 20(t_1 + 40 + t_1 + 20) =$

$\hookrightarrow 20(2t_1 + 60) = 40(\underbrace{t_1 + 30}_{t_7})$

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$2(1 - 6\sqrt{3}), 2 + \sqrt{3}$

$d = \frac{2 + \sqrt{3} - (2 - 12\sqrt{3})}{12 + 1} = \frac{\sqrt{3} + 12\sqrt{3}}{13} = \frac{13\sqrt{3}}{13} = \sqrt{3}$

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تعداد جملات: $4n - 3 + 2 = 4n - 1$

تعداد فاصله‌ها: $4n - 1 - 1 = 4n - 2$

واسطه n ام $\leftarrow 11$

بین دو عدد ۲ و ۳۲ $\leftarrow 4n - 3$ واسطه درج کرده‌ایم

$d = \frac{32 - 2}{4n - 2} = \frac{30}{4n - 2} = \frac{15}{2n - 1}$

$a_{n+1} = 2 + nd = 11 \longrightarrow n \times \frac{15}{2n-1} = 9 \rightarrow 15n = 18n - 9$

$3n = 9 \rightarrow \boxed{n = 3}$

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$a_n = 2a_{\frac{n}{2}}$

$a_2 = 2a_1$

$a_4 = 2a_2$

$\boxed{a_8 = 2a_4}$

$a_n + a_{n+4} = a + (n-1)d + a + (n+3)d = 2a + (2n+2)d$

$a_3 + a_{17} = a + 2d + a + 16d = 2a + 18d$

$2a + (2n+2)d = 2a + 18d \rightarrow \underbrace{(2n+2)}_{18} d = 18d \Longrightarrow n = 8$

$a + 7d = 2(a + 3d) = 2a + 6d \rightarrow -2a - 2d = 0 \rightarrow a + d = 0$

$a_k = a + (k-1)d = -d + (k-1)d = (k-2)d$

$\hookrightarrow d \neq 0 \longrightarrow k - 2 = 0 \longrightarrow \boxed{k = 2}$ جمله دوم