۲۰ آفرین!

نام و نام خانوادگی ......صدرا زارعی...... پاسخنامه تشریحی تکلیف شماره ...۱۳... کلاس .....دهم ریاضی A.....

۱	(۲)	$d = \frac{61-40}{4-1} = 7$ $a_n = 7n + b \xrightarrow{n=1} 40 = 7+b \to b = 33$ $a_n = 7n + 33 \xrightarrow{n=x} 208 = 7x + 33 \to x = \frac{175}{7} = 25$ ✓
۲	(۲)	$a_n = 7n+3 \to 100 \leq 7n+3 < 1000 \to \frac{97}{7} \leq n < \frac{997}{7} \to 13/\ldots \leq n < 142/\ldots$ $\to n = \{14, 15, 16, \ldots, 142\} \to$ تعداد $= \frac{142-14}{1} + 1 = 129$ عدد ✓
۳	(۲)	$a_{n+1} + a_{n+2} + a_{n+3} = -6n+12 \to 3a_{n+2} = -6n+12 \to a_{n+2} = -2n+4$ $a_{17} + a_8 = -30+4-12+4 = -34$ ✓
۴	(۲)	$2^{2x-3} + 2^{x-1} = 2 \times 2^{x+1} \to 2^x \times 2^x + 2^x = 4 \times 2^x + 44 \to 2^x(2^x+1) = 4(2^x+1)$ $\to 2^x = 4 \to x = 2$ $\Rightarrow 2^{2x-3} + 2^{x+1} + 2^x - 1 = 16-3+8+4-1 = 24$ ✓
۵	(۲)	$a_{12} = \frac{25+5}{2} = 15$ $a_{10} = \frac{25-5}{2} = 10$ $\to d = 2/5$ $a_{10} + 11d = 10 + 27/5 = 37/5$ ✓

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$a_1+a_2+a_3+a_4+a_5 = \frac{1}{3}(a_4+a_7+a_{10}+a_{13}+a_{16}) \rightarrow 5a_3 = \frac{1}{3}(5a_{13})$

$\rightarrow a_3 = \frac{1}{3}(a_3+5d) \rightarrow \frac{2a_3}{3} = \frac{5}{3}d \rightarrow 2a_3 = 5d \rightarrow a_3 = 2.5d$

$\frac{a_2}{a_1} = \frac{a_3-d}{a_{10}-2d} = \frac{2.5d-d}{2.5d-2d} = \frac{1.5d}{0.5d} = 3$ برابر ✓

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$t_n = t_{n-2}+10 \rightarrow t_n - t_{n-2} = 10 \rightarrow 3d = 15 \rightarrow d = 5$

$\frac{t_9^2 - t_5^2}{t_7} = \frac{(t_9+t_5)(t_9-t_5)}{t_7} = \frac{(t_7+t_7)(20)}{t_7} =$ برابر ۴۰ ✓

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$d = \frac{2+\sqrt{3}-10+12\sqrt{3}}{12} = \frac{13\sqrt{3}}{13} = \sqrt{3}$ ✓

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$\frac{3^{2n}-2}{4^{n-2}+1} = \frac{11-2}{n-1+1} \rightarrow \frac{30}{4n-2} = \frac{9}{n} \rightarrow 30n = 36n-18$

$\rightarrow n = 3$ ✓

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$a_3 + a_{17} = a_n + a_{n+4} \Rightarrow n+n+4 = 20 \rightarrow n = 8$

$a_{17} = 3a_4 \rightarrow 3a_4 - a_4 = 4d \rightarrow a_4 = 2d$

$a_4 - 2d = a_2$ ✓ جمله دوم

$\rightarrow a_4 + (2)\frac{a_4}{2} = 0 \rightarrow a_4(1+\frac{2}{2}) = 0$

$\rightarrow 1+\frac{2}{2} = 0 \rightarrow 2 = -2$ غیرممکن

$a_4 = 0$