پارسا سمایی دهم پسر A تکلیف شماره ۱۲ ۲۰ آفرین!

(۱) (۲)

$t_n = 5, 9, 13, 17, \dots$ (+4, +4, +4)

الف) $t_n = t_{n+1}$ ✓

ب) $t_{10} = 4 \times 10 + 1 = 41$ ✓

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(۲) (۲)

$t_n = 9, 10, 14, 18, \dots$ $\quad t_n = 4n + 2$

الف) $S_{10} = \frac{10}{2}(2 \times 9 + 9 \times 4) = 5(18 + 36) = 270$ ✓

ب) $t_{29} + t_{30} + t_{31} + t_{32} = \frac{4a + 111d}{2 \times 4} = 494$ ✓

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(۳) (۲)

$a_n = 1 + \sqrt{2}, 2, 3 - \sqrt{3}, \dots$ (+1−√2, +1−√2)

$a_{32} = a + 22d$

$a_{25} = a + 24d$

$2d = a_{25} - a_{32}$

$a_{25} - a_{32} = 2(1 - \sqrt{2}) = 2 - 2\sqrt{3}$ ✓

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(۴) (۲)

$a_n = a^{2x}, 3 \times 5^x, a^y$

$\frac{a^y + a^{2x}}{2} = 3 \times a^{2x}$ $\quad a^y + a^{2x} = 6 \times a^{2x}$ $\quad a^y = 5 \times a^{2x}$ $\quad xy = ?$

$b_n = x, 2, y$ $\quad y = 2x + 1$

$\frac{y + x}{2} = 2$ $\quad y + x = 4$ $\quad 2x - y = -1$

$\begin{cases} y + x = 4 \\ 2x - y = -1 \end{cases} + \quad 3x = 3$

$x = 1$ ✓ $\quad y = 3$ ✓ $\quad xy = 1 \times 3 = 3$ ✓

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(۵) (۲)

$a_n = 2n - 4, 2n - 1, 4n, \dots$

$-3, 0, 3, \dots$

$a_n = 3n - 9$ $\quad a_4 = (3 \times 4) - 9 = 9$ ✓

$\frac{4n + 2n - 4}{2} = 2n - 1$

$6n - 4 = 4n - 2$ $\quad 4n = 2$ $\quad n = \frac{1}{2}$ ✓

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(۶) (۲)

$a_n = 3, 5, 7, \dots$ $\quad a_n = 2n + 1$

$b_n = 2, 5, 8, \dots$ $\quad b_n = 3n - 1$

$2 \times 20 + 1 = 41$

$3n - 1 \le 41$

$3n \le 42$

$n \le 14$

14 جمله مشترک ✓

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(۷) (۲)

$a_1 + a_2 + a_4 = 21$

$a_1 + a_3 + a_5 = 10a$

$3a + 3d = 21$

$3a + 9d = 10a$

$6d = 18$

$d = 3$ $\quad a = -7$

$\frac{a_{13} - a_7 + a}{a} = \frac{12a + d}{a} = \frac{12(-7) + 3}{-7} = \frac{-81}{-7} = \frac{9}{7}$ ✓

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(۸) (۲)

$a_1 + a_2 + a_3 = 15$ $\quad 3a + 3d = 15$ $\xrightarrow{\times 3}$ $9a + 9d = 45$

$a_4 + a_5 = 25$ $\quad 3a + 7d = 25$ $\xrightarrow{\times -3}$ $-9a - 21d = -75$

$-12d = -30$

$d = 2.5$

$a = 2$

$a_{10} = a + 9d = 2 + 9 \times 2.5 = 24.5$ ✓

۹) ۲

$S_9 = 9S_3$ $\quad \frac{a_{20}}{a_7} = \frac{a+19d}{a+9d} = \frac{19\cdot d}{9\cdot d} = 3$ ✓

$\frac{9}{2}(2a+8d) = 9\times\frac{3}{2}(2a+2d)$

$2a+8d = 6a+6d$

$2d = 4a$

$\frac{d}{2} = a$

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۱۰) ۲

$a_1 = 11$

$a_7 = 34 = a+6d$

$d_a = 4$

$a_4 = 11+3\times4 = 23$

$b_n = 13, \underbrace{23}_{+d}, \underbrace{33}_{+d}, \underbrace{43}_{+d}, \ldots$

$23+3d = 33 \quad 3d = 10 \quad d_b = 5$ ✓

$\frac{13-23}{x+1} = 5 \quad -25$

$x = 4$

✓ واسطه حسابی