بهار شریعتی — کلاس دهم دختر C — تکلیف سری ۱۴

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۱) الف)

$t_n = 5, 9, 13, 17$ $\quad (\xrightarrow{+4}\ \xrightarrow{+4}\ \xrightarrow{+4}) \Rightarrow d=4$

$t_n = t_1+(n-1)d = 5+4n-4 = 4n+1$

ب) $4\times 10+1 = 41$

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۲) الف)

$t_n = 6, 10, 14, 18, \dots$ $\quad (\xrightarrow{+4}\ \xrightarrow{+4}\ \xrightarrow{+4})$

$t_n = 4n+2 \qquad t_{10} = 4\times10+2 = 42$

$\frac{n}{2}(t_1+t_{10}) = \frac{10\times 48}{2} = 240$

ب) بین جملات = ۳۲ ، ۳۱ ، ۳۰ ، ۲۹

$4t_1 + 118d = (4\times 6) + (118\times 4) = 496$

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۳)

$1+\sqrt2,\ 2,\ 3-\sqrt2 \qquad d = 2-1-\sqrt2 = 1-\sqrt2$

$d = 3-\sqrt2-2 = 1-\sqrt2$

$a_{25}-a_{23} = (a_1+24d)-(a_1+22d)$

$= 2d = 2(1-\sqrt2) = 2-2\sqrt2$

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۴)

$a_n = 5^{2x},\ 3\times 25^x,\ 5^y \Rightarrow 5^{2x}+5^y = 6\times \underbrace{25^x}_{5^{2x}}$

$b_n = x, 2, y \Rightarrow x+y=4$

$(1\times 5^{2x}) + 5^y = (6\times 5^{2x}) \Rightarrow 5^y = 5\times 5^{2x}$

$y = 2x+1$

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

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۵)

$2x-4+6x = \underbrace{2(2x-1)}_{4x-2} \Rightarrow 4x=2 \Rightarrow x=\frac12$

(۱) (۲) (۳) (۴)

$-3, 0, 3, \boxed{6}$ $\quad (\xrightarrow{+3}\ \xrightarrow{+3}\ \xrightarrow{+3})$

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۶)

$a_n = 3, 5, 7, \dots$ $\quad (\xrightarrow{+2}\ \xrightarrow{+2}) \qquad b_n = 2, 5, 8, \dots$ $\quad (\xrightarrow{+3}\ \xrightarrow{+3}) \qquad t_1 = 5$

$t_n = t_1+(n-1)d = 5+(n-1)6 = 6n-1$

$d_a = 2 \qquad d_b = 3 \qquad 2\times 3 = 6$ که قدرنسبت جملات مشترک (دنباله) $\qquad a_{20} = 41 \qquad b_{20} = 59$

$2n+1 \qquad 3n-1$

$6n-1 \le 41 \Rightarrow n\le 7$ $\qquad$ ۷ جمله

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۷)

$a_1+a_2+a_4 = 21$ و $a_1+a_3+a_5 = 105$

$3a+3d = 21 \qquad 3a+6d = 105$

$\Rightarrow a+d=7 \qquad a+2d=35 \Longrightarrow d = 35-7 = 28 \Rightarrow d=28 \Rightarrow a_1 = -21$

$a_3 - a_2 + a_1 = a_1+2d-a_1-d+a_1 = a_1+d = 28-21 = 7$

$\frac{7}{a_1} = \frac{7}{-21} = -\frac13$

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۸)

$a_1+a_2+a_3 = 15$ و $a_4+a_5 = 25$

$3a_1+3d = 15 \qquad 2a_1+7d = 25 \qquad a_{10} = ? \qquad 3\times 10 - 1 = 29$

$a_1+d = 5$

$$\begin{cases} 2a_1+7d = 25 \\ 2a_1+2d = 10 \end{cases} \Rightarrow 5d = 15,\quad d=3,\quad a_1=2$$

$\Rightarrow a_1+(n-1)d = 2+(n-1)3 = 3n-1$

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$S_9 = 9 S_3$ $\qquad \frac{a_{20}}{a_7} = ?$ $\qquad \frac{a_1+19d}{a_1+6d} = \frac{39a_1}{13a_1} = 3$ ۹)

$\frac{9}{2}(2a_1+8d) = 9\times\frac{3}{2}(2a_1+2d)$

$2a_1+8d = 6a_1+6d$

$4a_1-2d=0 \Rightarrow \underline{d=2a_1}$

۱۰)

$a_1 = 11 \qquad a_7 = 35$

$6d = 24 \Rightarrow d = 4$

$a_4 = 11 + (3)4 = 23$

(1) $\quad$ (4)

$38 \quad 23$

$3d' = -15 \Rightarrow d' = -5$

$\frac{13-38}{n+1} = -5 \qquad -25 = -5n-5 \Rightarrow n = 4$

چهار تا واسطه