

نکته انوری - دهم B

(سؤال ۱)

$$t_n = 5, 9, 13, 17, \dots \Rightarrow t_n = 4n + 1$$

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الف) $t_n = 4n + 1$

ب) $t_{10} = 4 \times 10 + 1 = 41$

(سؤال ۲)

الف) $S_{10} = 5 \left(\frac{5 + 41}{2} \right) = 240$

$t_n = 7, 10, 14, 18, \dots \Rightarrow t_n = 4n + 2 \rightarrow t_{10} = 42$

$$\begin{array}{cccc} a_1 & a_2 & a_3 & a_4 \\ 7 & 10 & 14 & 18 \\ \downarrow & \downarrow & \downarrow & \downarrow \\ 7 \times 4 + 2 = 30 & 10 \times 4 + 2 = 42 & 14 \times 4 + 2 = 58 & 18 \times 4 + 2 = 74 \end{array}$$

ب) ۴ جمله ششم $\leftarrow 4 \times 11 = 44$ یعنی آخرین جمله ۳۲ سیاه $\leftarrow 44$

(سؤال ۳)

$1 + \sqrt{3}, 2, 3 - \sqrt{3} \rightarrow d = 2 - 1 - \sqrt{3} = 1 - \sqrt{3}$

$a_{10} - a_{12} = a + 9d - a - 11d = 2d \Rightarrow 2(1 - \sqrt{3}) = 2 - 2\sqrt{3}$

(سؤال ۴)

$$a_n = 5^{2n}, 3 \times 2 \times 5^n, 5^y \rightarrow 3 \times 5^n = \frac{5^{2n} + 5^y}{2} \Rightarrow 3 \times 5^n = \frac{5^{2n} + 5^y}{2} \Rightarrow \frac{3}{5} = \frac{1 + 5^{2n-y}}{2} \Rightarrow 6 = 1 + 5^{2n-y} \Rightarrow 5^{2n-y} = 5 \Rightarrow 2n - y = 1 \Rightarrow y = 2n - 1$$

(سؤال ۵)

$$2n - 4, 2n - 1, 4n, \dots \rightarrow 4n - 2 = 2n - 4 + 4n \rightarrow 4n - 2 = 6n - 4 \rightarrow -2n = -2 \rightarrow n = 1$$

(سؤال ۶)

$a_n = 3, 5, 7, \dots \rightarrow a_n = 2n + 1 \rightarrow a_{10} = 21$

$b_n = 2, 5, 8, \dots \rightarrow b_n = 3n - 1 \rightarrow 59$

$$c_n = 4n - 1 \rightarrow 4n - 1 < 41 \rightarrow 4n < 42 \rightarrow n < 10.5 \rightarrow n \leq 10$$

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(سؤال ٧) $a_1 + a_r + a_p = 21$

$$\frac{a_r - a_r + a_1}{a_1}$$

$$a_1 + a_r + a_p = 105$$

$$3a + 7d = 105 \rightarrow a + 7d = 35$$

$$3a + 3d = 21 \rightarrow a + d = 7$$

$$a + d = 7 \rightarrow -2a - 2d = -14$$

$$a + 7d = 35$$

$$-a = -21 \rightarrow a = 21$$

$$\Rightarrow \frac{a_r - a_r + a_1}{a_1} = \frac{a_1 + 7d - a - d + a}{-21} = \frac{d + a}{-21} = \frac{7 + 21}{-21} = \frac{28}{-21} = -\frac{4}{3}$$

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(سؤال ٨) $a_1 + a_r + a_p = 15 \rightarrow 3a + 3d = 15 \rightarrow a + d = 5$

$$a_r + a_p = 25 \rightarrow 2a + 7d = 25$$

$$\Rightarrow \begin{cases} a + d = 5 \\ 2a + 7d = 25 \end{cases} \rightarrow \begin{cases} -2a - 2d = -10 \\ 2a + 7d = 25 \end{cases}$$

$$a + 9d = 15 \rightarrow 2 + 27 = 29$$

$$5d = 15 \rightarrow d = 3$$

$$a = 2$$

(سؤال ٩) $S_q = 9S_p \rightarrow \frac{9}{1} (2a + (9-1)d) = 9 \times \frac{3}{1} (2a + 7d) \rightarrow 9a + 72d = 27a + 27d$

$$\frac{a_r}{a_v} = \frac{a + 19d}{a + 7d} \rightarrow$$

$$\frac{5d + 19d}{5d + 17d} = \frac{42d}{12d} = \frac{7}{2}$$

$$a + 19d = 7a + 7d$$

$$-2a = -12d \rightarrow 2a = 12d$$

$$a = 6d$$

(سؤال ١٠) $a_1 = 11$, $a_v = 35 \rightarrow a + 7d = 35 \rightarrow 11 + 7d = 35 \rightarrow d = 4 \Rightarrow a_n = 11 + 4(n-1)$

$$a_r = 14 + 4 = 18$$

$$\frac{18 - 11}{n+1} = -5 \rightarrow n = 3$$

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$$b_n = 38 + (n-1)d = 23 \rightarrow 38 + 4d = 23 \rightarrow 4d = -15 \rightarrow d = -\frac{15}{4} \rightarrow b_n = -\frac{15}{4}n + 38$$

$$d = \frac{b - a}{n+1} \rightarrow -\frac{15}{4} = \frac{38 - 11}{n+1} \rightarrow -\frac{15}{4} = \frac{27}{n+1} \rightarrow -15(n+1) = 108 \rightarrow -15n - 15 = 108 \rightarrow -15n = 123 \rightarrow n = -\frac{123}{15} = -8.2$$

$$\frac{q}{r} (ra_1 + rd) = \cancel{q} \times \frac{r}{\cancel{r}} (ra_1 + rd)$$

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$$ra_1 + rd = ra_1 + rd$$

$$ra_1 = rd$$

$$ra_1 = rd$$

$$\frac{a_1 r}{a_1 + 1ra_1} = \frac{a_1 + 1ra_1}{a_1 + 1ra_1} = \textcircled{r}$$