

« یلیا انوری - دهم B »

$$1 \rightarrow \{1\}$$

$$2 \rightarrow \{1, 3, 4\}$$

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$$3 \rightarrow \{5, 6, 7, 8, 9\}$$

سؤال ۱: عدد اول هر گروه: $(n-1)^2 + 1$

$$\Rightarrow b = \frac{a+c}{2} \rightarrow \frac{181+95}{2} = 73$$

سؤال ۲: $\{1, 2, 3\}, \{4, 5, 6, \dots, 12\}, \{13, 14, \dots, 39\}, \{40, 41, \dots, 120\}, \{121, \dots, 363\}$

$$\frac{121+363}{2} = 242$$

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سؤال ۳:

$$\alpha_n = \begin{cases} r^k; n = 3k \rightarrow n = 0, 3, 6, 9 \rightarrow 1, 2, 4, 8 \\ -2k+4; n = 3k+1 \rightarrow n = 1, 4, 7 \rightarrow 4, 2, 0 \\ \left\lfloor \frac{n}{k+2} \right\rfloor + \alpha; n = 3k+2 \rightarrow n = 2, 5, 8 \rightarrow 1+\alpha, 1+\alpha, 2+\alpha \end{cases}$$

$1+4+2+1+4+2+1+\alpha+1$
 $+ \alpha + 4\alpha = 19$
 $2\alpha + 25 = 19$
 $\alpha = -2$

$$\alpha_1 + \alpha_0 + \dots + \alpha_{19} = (1+\alpha) + (1+\alpha) + (2+\alpha) + \dots + (2+\alpha) = 2(a+1) = 2 \times -1 = -2$$

$$n=19 \rightarrow k=9$$

$$22=0 \leftarrow 2+\alpha$$

$$\left\lfloor \frac{19}{11} \right\rfloor + \alpha = 2 + \alpha$$

$$\alpha_0 = 14 \rightarrow -5 + 5b + c = 14$$

$$\alpha = \frac{1}{-5} \times -14 = \frac{-1}{5}$$

$$\alpha_{17} = 17, 2 \rightarrow \frac{-49}{5} + 7b + c = 17, 2$$

$$\frac{\alpha_{17}}{\alpha_1} = \frac{225 \times \frac{-1}{5} + 70 - 1}{\frac{-1}{5} + 4 - 1} = \frac{114}{2,8} = 5$$

$$\Rightarrow -5b - c = -19$$

$$7b + c = 27$$

$$7b = 1 \rightarrow \boxed{b=4}, \boxed{c=-1}$$

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حساب: $\alpha_1 + (n-1)d$ فعلی: $\alpha n + b \rightarrow \alpha_1 = 1 \cdot \alpha + b = 0 \rightarrow b = -1 \cdot \alpha$

$\alpha_1 + 3d = 2\alpha' + b \rightarrow \alpha_1 + 3d = 1\alpha'$

سؤال ۵:

$\alpha_1 + 7d = 7\alpha' + b \rightarrow \alpha_1 + 7d = 3\alpha' \rightarrow \alpha_1 + 3d + 4d = 3\alpha' \rightarrow 4d = -5\alpha' \rightarrow d = \frac{-5}{4}\alpha'$

درجته (d) = $\frac{15\alpha' + b}{\frac{-5}{4}\alpha'} = \frac{15\alpha' + b}{\frac{-5}{4}\alpha'} = \frac{5\alpha'}{\frac{-5}{4}\alpha'} = -4$ ($d \neq 0$)

$7\alpha_r = 5\alpha_r \alpha + 3\alpha_r \alpha$

سؤال ۶: $\frac{\alpha_r}{d}$

$7(\alpha+d)^r = 5(\alpha+3d)^r \alpha + 3(\alpha+d)^r \alpha \Rightarrow 7\alpha^r + 17\alpha d^r + 7d^r = 5\alpha^r + 15\alpha d^r + 3\alpha^r + 3\alpha d^r$

$= 2\alpha^r - 7d^r + \alpha d = 0, \frac{\alpha}{d} = n \rightarrow \alpha = d n \Rightarrow 2d^r n^r - 7d^r + d^r n = 0$

$\rightarrow d^r(2n^r + n - 7) = 0 \rightarrow (2n - 3)(n + 1) = 0 \rightarrow n = \frac{3}{2}, n = -1$

$\frac{\alpha_r}{d} = \frac{\alpha + 3d}{d} = \frac{\alpha}{d} + 3 = n + 3 \rightarrow n = -2 \rightarrow -2 + 3 = 1 \checkmark$
 $\rightarrow n = \frac{3}{2} \rightarrow \frac{3}{2} + 3 = \frac{9}{2} \checkmark$

حساب: $\alpha, b, c \rightarrow 2b = \alpha + c$

سؤال ۷: با عددگذاری ۱ را فرض کنیم

هندسی: $b, \frac{\alpha}{r}, \frac{c}{r} \rightarrow \frac{\alpha^r}{r} = \frac{bc}{r} \rightarrow \alpha^r = bc$

$\Rightarrow 2b = \alpha + 1 \rightarrow 2\alpha^r = \alpha + 1 \rightarrow \alpha \begin{cases} 1 \rightarrow \\ \frac{1}{r} \checkmark \end{cases}$ چون دنباله ثابت می شود.

$\alpha^r = b$

هندسی: $b, \frac{1}{r}, \frac{1}{r}$

$r = -1 \rightarrow \boxed{2r = -2}$

هندسی: $\alpha, b, c \rightarrow b^r = \alpha c \rightarrow b^r = \alpha$

سؤال ۸: ۱ را فرض کنیم

حساب: $3b, 2\alpha, c \rightarrow 4\alpha = 3bc \rightarrow 4\alpha = 3b \rightarrow 4b^r = 3b$

$\boxed{b = \frac{4}{3}} \quad \boxed{\alpha = \frac{9}{16}}$

هندسی: $\frac{9}{16}, \frac{4}{3}, \frac{4}{3}$

$r = \frac{4}{3} \rightarrow \frac{\alpha_9}{\alpha_4} = r^3 = \frac{4^3}{3^3} \checkmark$

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$$\frac{\alpha_y}{(\alpha_r)^y} + \frac{\alpha_r}{(a)^r} = 2 \rightarrow \frac{\alpha r^a}{a^y r^y} + \frac{\alpha r}{a^r} = 2 \rightarrow \frac{r^y}{a^y} + \frac{\alpha r}{a^r} = 2$$

سؤال ٩:

$$\frac{r^y + \alpha r}{a^r} = 2 \rightarrow 2a^r - \alpha r - r^y = 0 \rightarrow (2a + r)(a - r) = 0 \rightarrow \begin{cases} \alpha = r \\ 2a = -r \rightarrow r = -2a \end{cases}$$

$$\rightarrow \frac{\alpha r}{a^r} = \frac{\alpha r}{a^r} = \frac{a^r}{-2a^r} = -\frac{1}{2}$$

$$\rightarrow \frac{\alpha r}{a^r} = \frac{\alpha r}{a^r} = 1$$

$$\alpha_y = \sqrt{a_f} \rightarrow \alpha_r^y = a_f \rightarrow \alpha_r^y r^f = \alpha r^f \rightarrow \alpha_r r = 1$$

سؤال ١٥:

$$\alpha_a = 2V \rightarrow \alpha_r^f = 2V \xrightarrow{\alpha r = 1} 1 \times r^y = 2V \rightarrow r = 2 \rightarrow \alpha_1 = \frac{1}{3}$$

$$\frac{1}{2} - \alpha_1 = \frac{1}{2} - \frac{1}{3} = \frac{1}{6}$$