

19, 25

Date:

بیلیا انوری - دهم B

$$\alpha_n = \frac{1}{r}, \frac{1}{r^2}, \frac{1}{r^3}, \dots \rightarrow \alpha_n = \frac{1}{r} \times r^{n-1}$$

مسئله 1:

$$\alpha_{10} = \frac{1}{r} \times r^9 = r^8 = 256 \quad \text{الف) } \textcircled{2}$$

$$\frac{\alpha_{14}}{\alpha_{13}} = \frac{\alpha r^{14}}{\alpha r^{13}} = r^1 = r^8 = 256 \quad \text{ب) } \textcircled{2}$$

$$b^r = ac \rightarrow \alpha_r \cdot \alpha_{10} = \alpha r^r \cdot \alpha r^9 = r \times 256 = 1024 \rightarrow \sqrt{1024} = 32 \quad \text{ج) } \textcircled{2}$$

$$\frac{1}{r} \times r^{n-1} = 128 \rightarrow \frac{1}{r} \times r^{n-1} = \frac{1}{r} \times r^8 \rightarrow n-1 = 8 \rightarrow \boxed{n=9} \quad \text{د) } \textcircled{2}$$

$$\frac{\alpha r^v}{\alpha r^r} = \frac{92}{12} \rightarrow r^3 = 1 \rightarrow r = 1 \Rightarrow \alpha \times 12 = 12 \rightarrow \alpha = \frac{12}{12} = \frac{1}{1} \quad \text{مسئله 2: } \textcircled{2}$$

$$\alpha_n = \frac{1}{r} \times r^{n-1} \rightarrow \frac{1}{r} \times r^9 \rightarrow 1 \times r^8 = 1 \times 128 = 128 \quad \text{ب) } \textcircled{2}$$

$$\alpha_1 \cdot \alpha_r \cdot (\alpha_r) \cdot \alpha_r \cdot \alpha_{10} = 243 \rightarrow (عدد) \rightarrow \alpha_r^5 = 3^5 \rightarrow \alpha_r = 3 \quad \text{مسئله 3: } \textcircled{2}$$

الف)

$$\alpha_1 \cdot \alpha_{10} \rightarrow (\alpha_r)^2 = 9 \quad \text{ب) } \textcircled{2}$$

$$(r\sqrt{r})^r = r^a \cdot r^b \rightarrow r^{\frac{a+b}{2}} = r^{\frac{a+b}{2}} \rightarrow \frac{a+b}{2} = \frac{5}{2} = 2.5 \quad \text{مسئله 4: } \textcircled{2}$$

Date:

به ازای $x = -\frac{\sqrt{2}}{2}$ حاصل $\frac{a_{11}}{a_{12}} = q^4$ عددی متغیر می شوددر صورتی که q^4 مقعاً نامتناهی است پس $x = -\frac{\sqrt{2}}{2}$ غیر قابل قبول است

سؤال ۵: (۱, ۵)

$$a_p = 1 - x$$

$$a_v = x$$

$$a_{11} = x + 1$$

$$\rightarrow x^2 = (1-x)(x+1) \rightarrow x^2 = x + 1 - x^2 \rightarrow 2x^2 = 1 \rightarrow x^2 = \frac{1}{2} \rightarrow x = \pm \frac{1}{\sqrt{2}} = \pm \frac{\sqrt{2}}{2}$$

$$a_1 + a_r = 28 \rightarrow a + ar^3 = 28 \rightarrow a(1+r^3) = 28$$

سؤال ۶:

$$a_r + a_p = 12 \rightarrow ar(1+r^2) = 12 \Rightarrow \frac{a(1+r^3)}{ar(1+r)} = \frac{28}{12} = \frac{7}{3}$$

$$\rightarrow \frac{(1+r)(1+r-r^2)}{r(1+r)} = \frac{1-r+r^2}{r} = \frac{7}{3} \rightarrow 3r = 3 - 3r + 3r^2 \rightarrow 3r^2 - 6r + 3 = 0$$

$$r^2 - 2r + 1 = 0 \rightarrow (r-1)(r-1) = 0 \rightarrow r = 1$$

$$\boxed{a=1} \quad \boxed{r=3} \rightarrow a_r = 1 \times 3^3 = 27$$

بزرگترین

$$\boxed{a=\frac{1}{3}} \quad \boxed{a=27} \rightarrow a_1 = 27$$

بزرگترین

$$\frac{x}{r} + x + xr = 13 \rightarrow \frac{3+3r^2}{r} = 10 \rightarrow 3r^2 + 3 = 10r \rightarrow 3r^2 - 10r + 3 = 0 \quad (*)$$

سؤال ۷:

$$\frac{x}{r} \cdot x \cdot xr = 27 \rightarrow x^3 = 27 \rightarrow \boxed{x=3}$$

$$(*) \rightarrow 3r^2 - 10r + 3 = 0 \rightarrow r^2 - 10r + 9 = 0 \rightarrow (r-9)(r-1) = 0 \rightarrow \begin{cases} r=9 \\ r=1 \end{cases}$$

$$r=3 \rightarrow 1, 3, 9$$

$$r=\frac{1}{3} \rightarrow 9, 3, \frac{1}{3}$$

$$\alpha_n = 2 \cdot 2 \cdot 18 \rightarrow \alpha_n = 2 \times 3^{n-1}$$

سؤال ۸:

$$S_n = a_1 \left(\frac{r^n - 1}{r - 1} \right) \rightarrow S_{10} = 2 \left(\frac{3^{10} - 1}{3 - 1} \right) = 177142$$

الف) (۱,۵)

$$\rightarrow (مجموعه وسط)^n = (a_0)^{10} \rightarrow a_0 = 2 \times 3^4 = 2 \times 81 = 162 \rightarrow 162^{10}$$

ب)

$$(a_1 \times a_{10}) = (2 \times 2 \times 3^9) = 6 \times 3^9$$

سؤال ۹: r ها: $5, 10, 20, 40, 80, \dots \rightarrow 5, 10, 20, \dots$ مثال عددی

$$a, ar, ar^2, ar^3, \dots \rightarrow ar - a, ar^2 - ar, ar^3 - ar^2$$

$$a(r-1), ar(r-1), ar^2(r-1)$$

قدر نسبت r است

(۲)

$$a_1, a_r, a_{r^2}, a_{r^3}, a_{r^4}, \dots, a_n$$

سؤال ۱۰:

$$a + (a+d) + (a+2d) + (a+3d) + \dots + (a+(n-1)d)$$

الف)

$$na + d(1+2+3+\dots+(n-1)) \rightarrow na + d \frac{(n-1)n}{2} = \frac{n}{2} (2a + (n-1)d)$$

$$S = a_1 + a_r + a_{r^2} + \dots + a_n$$

ب)

$$S = a + ar + ar^2 + ar^3 + \dots + ar^{n-1}$$

$$rS = ar + ar^2 + ar^3 + \dots + ar^{n-1} + ar^n$$

$$S - rS = a - ar^n \rightarrow S(1-r) = a(1-r^n) \rightarrow S = \frac{a(1-r^n)}{1-r}$$