

نام و نام خانوادگی کلاس شماره تکلیف شماره پاسخنامه تشریحی کبارش سیدانی B.....

(الف) $a_n = a q^{n-1} = \frac{1}{r} \times r^{n-1} \Rightarrow a_{10} = \frac{1}{r} \times r^9 = r^8 = 256$

(ب) $a_{17} = a_{13} \times q^4 \Rightarrow \frac{a_{17}}{a_{13}} = r^4 = 16$

(ج) $b^2 = ac \Rightarrow b^2 = a_8 \times a_{10} = a_9^2 \Rightarrow b = a_9 = \frac{1}{r} \times r^8 = r^7 = 32$ (در رابطه هرتزی)

(د) $\frac{1}{r} \times r^{n-1} = r^7 \Rightarrow n-1=8 \Rightarrow n=9 \Rightarrow$ جمله نهم

$\frac{a_8}{a_5} = \frac{96}{12} = q^3 \Rightarrow q = 2$

$a_{10} = a_8 \times q^2 = 96 \times 4 = 384$

(الف) $a_1 \times a_2 \times a_3 \times a_4 \times a_5 = a_3^5 = 243 \Rightarrow a_3 = 3$

(ب) $a_1 \times a_5 = a_3^2 = 9$

$b^2 = ac \Rightarrow (4\sqrt{2})^2 = 2^a \times 2^b \Rightarrow 32 = 2^{a+b} \Rightarrow a+b=5$

واسطه حسابی بین a و b $= \frac{a+b}{2} = \frac{5}{2} = 2.5$

$a_v^2 = a_3 \times a_{11} \Rightarrow r^2 = (1-r)(1+r) \Rightarrow r^2 = 1-r^2 \Rightarrow$

$2r^2 = 1 \Rightarrow r^2 = \frac{1}{2} \Rightarrow r = \pm \frac{\sqrt{2}}{2}$

$$\left. \begin{aligned} a + aq^r &= 21 \Rightarrow a(1+q^r) = 21 \\ aq + aq^r &= 12 \Rightarrow a(q+q^r) = 12 \end{aligned} \right\} \Rightarrow \frac{1+q^r}{q+q^r} = \frac{V}{r} \Rightarrow$$

$$\frac{(1+q^r)(1+q^r-q)}{q(1+q)} = \frac{V}{r} \Rightarrow Vq = r + rq^r - q \Rightarrow \textcircled{rq^r - \log q + r = 0}$$

$$\text{اگر } q = r \Rightarrow 21a = 21 \Rightarrow a = 1 \Rightarrow 1, 3, 9, 27$$

$$\text{اگر } q = \frac{1}{r} \Rightarrow \frac{21}{r} a = 21 \Rightarrow a = r \Rightarrow 27, 9, 3, 1$$

$$(q-q)(q-1) = 0 \Rightarrow q = \frac{q}{r} = r \text{ یا } q = \frac{1}{r}$$

مقدار عددی بنابر ترتیب ۱، ۳، ۹، ۲۷ و ۲۷، ۹، ۳، ۱

$$a_1 \times a_r \times a_r = 27 \Rightarrow a_r^r = 27 \Rightarrow q_r = 3$$

$$\frac{r}{q} + r + rq = 12 \Rightarrow r + rq + rq^r = 12q \Rightarrow \textcircled{rq^r - \log q + r = 0} \Rightarrow q^r - \log q + r = 0 \Rightarrow$$

$$\text{اگر } q = r \Rightarrow 1, 3, 9$$

$$\text{اگر } q = \frac{1}{r} \Rightarrow 9, 3, 1$$

$$(q-q)(q-1) = 0 \Rightarrow q = \frac{q}{r} = r \text{ یا } q = \frac{1}{r}$$

$$S_n = a_1 \left(\frac{q^n - 1}{q - 1} \right) = r \left(\frac{r^n - 1}{r - 1} \right) = \frac{r^{n+1} - r}{r - 1}$$

(الف)

$$P_n = (a_1 \times a_n)^{\frac{n}{2}} = (a_1 \times a_{10})^{\frac{10}{2}} = (2 \times 2 \times 3^9)^5 = 2^{10} \times 3^{45}$$

(ب)

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$$a_n : a, aq, aq^2, aq^3, \dots, aq^{n-1}$$

$$a_r - a_1 = a(q-1)$$

$$a_r - a_r = aq(q-1)$$

$$a_r - a_r = aq^2(q-1)$$

$$\vdots$$

$$\frac{a_r - a_r}{a_r - a_1} = \frac{a_r - a_r}{a_r - a_r} = \frac{a_r - a_r}{a_r - a_r} = \dots = \frac{a_{n+1} - a_n}{a_n - a_{n-1}} = q$$

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نس: قدر نسبت دنباله حسابی برابر با q است.

(الف) $S_n = a + a + d + a + 2d + \dots + a + (n-2)d + a + (n-1)d$

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

$\text{جمع} = ra + (n-1)d \quad \text{جمع} = ra + (n-1)d \quad \dots \quad \text{جمع} = ra + (n-1)d$

(ب) $S_n = a_1 + a_1q + \dots + a_1q^{n-2} + a_1q^{n-1} \xrightarrow{\times q} qS_n = a_1q + a_1q^2 + \dots + a_1q^{n-1} + a_1q^n$

$$\Rightarrow a_1q^n + S_n - a_1 = qS_n \Rightarrow S_n(q-1) = a_1(q^n-1) \Rightarrow$$

$$S_n = \frac{a_1(q^n-1)}{q-1} = \frac{a_1(1-q^n)}{1-q}$$