نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

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$a_n = \frac{1}{2}, 1, 2, \cdots \Rightarrow q = \frac{1}{\frac{1}{2}} = 2$

الف) $a_{10} = a_1 \times q^9 = \frac{1}{2} \times 2^9 = 256$

ب) $\frac{a_{12} = a_1 q^{12}}{a_{13} = a_1 q^{12}} \Rightarrow \frac{a_1 q^{12}}{a_1 q^{12}} = q^4 = 2^4 = 16$

ج) $\frac{a_4 = a_1 q^3 = \frac{1}{2} \times 2^3 = 4}{a_{10} = a_1 q^9 = \frac{1}{2} \times 2^9 = 256} \Rightarrow 4, 8, 16, 32, 64, 128, 256$

د) $128 = a_1 q^{n-1} = \frac{1}{2} q^{n-1} \Rightarrow q^{n-1} = 256 \xrightarrow{q=2} 2^{n-1} = 256 \Rightarrow n-1 = 8 \Rightarrow n = 9$

۲

$a_0 = 12 \quad a_8 = 96 \rightarrow \frac{a_8}{a_0} = \frac{a_1 q^7}{a_1 q^3} = q^5 = \frac{96}{12} = 8 \Rightarrow q = \sqrt[3]{8} = 2$

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

۳

$a_1 \times a_2 \times a_3 \times a_4 \times a_5 = 243 \quad a_1 \times a_5 = a_2 \times a_4 = a_3 \times a_3 \Rightarrow$

الف) $a_3^5 = 243 \quad a_3 = 3$

ب) $a_1 \times a_5 = a_3 \times a_3 = 3 \times 3 = 9$

۴

$a, b, c \rightarrow b^2 = ac$

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

واسطحسابی $a, b = \frac{a+b}{2} = \frac{5}{2} = 2,5$

۵

$a_3 = 1-x \quad a_7 = x \quad a_{11} = x+1 \quad a_7 \times a_7 = a_3 \times a_{11} = x^2 = (x+1)(1-x) = 1-x^2$

$\Rightarrow a_7 = x = \sqrt{1-x^2} \Rightarrow x^2 = 1-x^2$

$2x^2 = 1$

$x^2 = \frac{1}{2}$

$x = \pm \frac{1}{\sqrt{2}}$

۶

$a_1 + a_4 = 28 = a_1 + a_1 q^3 = a_1(1+q^3)$

$a_2 + a_3 = 12 = a_1 q + a_1 q^2 = a_1 q(1+q)$

$\rightarrow \frac{a_1(1+q^3)}{a_1 q(1+q)} = \frac{28}{12} = \frac{a_1(1+q)(1-q+q^2)}{a_1 q(1+q)} = \frac{7}{3}$

$\rightarrow 7q = 3 - 3q + 3q^2 \rightarrow 3 - 10q + 3q^2 = 0 \rightarrow (3q-1)(q-3) = 0 \Rightarrow q = \left\{ \frac{1}{3}, 3 \right.$

⇒ بزرگترین جمله

$q=3 \Rightarrow a_1 \times 3(1+3) = 12 \Rightarrow a_1 = 1 \Rightarrow$ بزرگترین $= a_1 q^3 = 27$

$q=\frac{1}{3} \Rightarrow a_1 \times \frac{1}{3}(1+\frac{1}{3}) = 12 \Rightarrow a_1 = 27 =$ بزرگترین

۷

$a_1 \times a_2 \times a_3 = 27 = a_1^3 q^3 = 27 \Rightarrow a_1 q = 3 = a_2$ $\qquad a_1 + a_2 + a_3 = 13$

$\Rightarrow$ ۱، ۳، ۹ یا ۹، ۳، ۱

۸

$a_n = 2, 6, 18, \dots$

الف) $a_n = 2 \times 3^{n-1} \rightarrow a_{10} = 2 \times 3^9$ $\qquad S_{10} = \frac{10}{2}(2 + 2 \times 3^9) = 10 + 10 \times 3^9 = 196840$

ب) $P_n = \sqrt{(a_1 \times a_n)^n} \Rightarrow P_{10} = \sqrt{(2 \times 2 \times 3^9)^{10}} = (2 \times 2 \times 3^9)^5 = 3025216211508053707410432$

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۱۰

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

$S_n = (n-1)d + t + \dots + d + t + t$ ⊕

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

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

$S_n = \frac{n}{2}(2a + (n-1)d)$

ب) $S_n = a_1 + a_1 q + a_1 q^2 + \dots + a_1 q^{n-1}$ $\quad \times q$

$S_n q = a_1 q + a_1 q^2 + a_1 q^3 + \dots + a_1 q^n$ ⊖

$S_n - S_n q = a_1 + a_1 q^n$

$S_n(1-q) = a_1(1-q^n)$

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