

نام و نام خانوادگی: کلاس: ۱۴..... پاسخنامه تشریحی تکلیف شماره ۱۴.....	
۱	(الف) $q = 2, a_1 = \frac{1}{2} \Rightarrow a_n = \frac{1}{2} \times 2^{n-1} \xrightarrow{n=10} a_{10} = \frac{1}{2} \times 2^9 = 2^8 = 256$ (ب) $\frac{a_v}{a_w} = \frac{\frac{1}{2} \times 2^{14}}{\frac{1}{2} \times 2^{12}} = 2^2 = 4$ یا $\frac{a_{10}}{a_w} = \frac{a_1 \times q^{14}}{a_1 \times q^{12}} = q^2 \Rightarrow 2^2 = 4$ (ج) $\begin{matrix} (10) & (9) & (8) & (7) & (6) & (5) & (4) & (3) & (2) & (1) \\ 4 & 8 & 16 & 32 & 64 & 128 & 256 & 512 & 1024 & 2048 \end{matrix}$ $a_n = 128 \Rightarrow a_1 \times q^{n-1} = 128 \xrightarrow{q=2} \frac{a_1}{2^{n-1}} = 128 \xrightarrow{2^7=128} \frac{a_1}{2^7} = 128 \Rightarrow a_1 = 2^{14} = 16384$ $\Rightarrow 2^{n-1} = 2^7 \Rightarrow n = 8$
۲	$a_5 = 12 \Rightarrow q^4 = \frac{12}{a_1} \Rightarrow q^4 = 1 \Rightarrow q = \sqrt[4]{1} = 1$ $a_n = 94 \Rightarrow q^{n-1} = \frac{94}{a_1} \Rightarrow q^{n-1} = \frac{94}{1} = 94$ $\Rightarrow q^{n-1} = 2^6 \Rightarrow n = 7$
۳	(الف) $a_1 \times a_2 \times a_3 \times a_4 \times a_5 = (a_1 \times q^0) \times (a_1 \times q^1) \times (a_1 \times q^2) \times (a_1 \times q^3) \times (a_1 \times q^4)$ $= a_1^5 = 243 \Rightarrow a_1 = \sqrt[5]{243} = 3$ (ب) $a_1 \times a_2 \times a_3 \times a_4 \times a_5 = a_1 \times a_1 \times q \times q^2 \times q^3 = a_1^5 \times q^6 = 11 \Rightarrow a_1 = \sqrt[5]{11} = \sqrt[5]{11} = q$
۴	$2^9, 4\sqrt{2}, 2^b \xrightarrow{\text{نسبت متساوی}} 2^9 \times 2^b = (4\sqrt{2})^2 \Rightarrow 2^{9+b} = 2^5 \Rightarrow a+b = 5$ $a, 0, b \xrightarrow{\text{نسبت حسابی}} 0 = \frac{a+b}{2} \Rightarrow a+b = 0$
۵	$a_3 = 1 - m$ $a_v = m$ $a_{11} = m + 1$ $\xrightarrow{\text{هندسی}} a_v \cdot a_{11} = a_v^2 \Rightarrow (1-m)(m+1) = m^2$ $= 1 - m^2 = m^2$ $\Rightarrow 2m^2 = 1$ $\Rightarrow m^2 = \frac{1}{2}$ $\Rightarrow m = \pm \frac{1}{\sqrt{2}}$

$$a_1 + a_4 = 1 \rightarrow a_1 = 1 - a_2 = a_3 - a_4 = 1 - a_4 = 1 \checkmark$$

$$a_2 + a_3 = 1$$

$$a_4 = 1 \checkmark$$

$$a_1 \times a_2 \times a_3 = 1 \xrightarrow{\text{مضروب}} \frac{a_1}{q} \times a_2 \times a_3 = 1 \Rightarrow a_1 = 1$$

$$a_1 + a_2 + a_3 = 1 \xrightarrow{\text{مضروب}} \frac{1}{q} + \frac{1}{q} + \frac{1}{q} = \frac{1+1+1}{q} = 1 \Rightarrow 1+1+1 = 1 \times q \Rightarrow 3 = q$$

$$\Rightarrow 1 \times q - 1 \times q + 1 = 0 \Rightarrow q = \frac{1}{1} = 1 \quad a_2 = 1 \quad a_3 = 1$$

$$q^x - 1 \times q + q \rightarrow q \rightarrow \frac{1}{q} \rightarrow \frac{1}{q}$$

$$\text{الف) } S_n = a_1 \left(\frac{q^n - 1}{q - 1} \right) \Rightarrow S_{10} = 1 \times \frac{1^{10} - 1}{1 - 1} = \frac{0}{0} = 0 \text{ (غير محدد)}$$

$$\text{ب) } P_n = \sqrt{(a_1 \cdot a_n)^n} \Rightarrow \sqrt{(1 \times 1)^{10}} = (1 \times 1)^5 = 1$$

$$a_1 = 1$$

$$a_{10} = 1 \times 1^9 = 1$$

$$a_1, a_2, a_3, \dots, a_{n-1}, a_n$$

$$= a_1, (a_1 q), (a_1 q^2), \dots, (a_1 q^{n-1}), (a_1 q^n)$$

$$\xrightarrow{\text{اقتطاع جميع الحدود}} (a_1 - a_1 q), (a_1 q - a_1 q^2), (a_1 q^2 - a_1 q^3), \dots$$

$$= a_1(1 - q), a_1 q(1 - q), a_1 q^2(1 - q), \dots$$

$$\xrightarrow{q} \xrightarrow{q} \xrightarrow{q} \rightarrow \text{نظام هندسي, } q = q' \checkmark$$

$$\text{الف) } S_n = a_1 + a_2 + a_3 + \dots + a_n$$

$$\Rightarrow S_n = a_1 + (a_1 q) + (a_1 q^2) + \dots + (a_1 q^{n-1})$$

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

$$\Rightarrow S_n = (a_1 + a_1 q) + (a_1 q + a_1 q^2) + \dots + (a_1 q^{n-2} + a_1 q^{n-1})$$

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