

نام و نام خانوادگی فرزند صالحی پاسخنامه تشریحی تکلیف شماره ۱۴ کلاس (روز یکشنبه)

$$a_n = \frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} \times \dots \rightarrow q=2, a_1 = \frac{1}{2}$$

الف) $a_9 = ? \rightarrow a_9 q^{n-1} \rightarrow \frac{1}{2} \times (2)^{10-1} \rightarrow \frac{1}{2} \times 2^9 \rightarrow \frac{512}{2} = 256$

ب) $\frac{a_{14}}{a_{13}} = ? \rightarrow \frac{q^{14}}{q^{13}} \rightarrow \frac{2^{14}}{2^{13}} \rightarrow 2^{14-13} \rightarrow 2^1 = 2$

ج) $a_8 = a_9 q \rightarrow a_8 = 256 \div 2 = 128$

هندس $\begin{cases} a_5 = 16 \\ a_8 = 94 \end{cases} \rightarrow q^3 = \frac{94}{16} \rightarrow q^3 = 5.875 \rightarrow q = 1.8$

$a_{10} = ? \rightarrow a_9 q \rightarrow 94 \times 1.8 \rightarrow 169.2$

$a_1 \times a_2 \times a_3 \times a_4 \times a_5 = 256 \rightarrow \left(\frac{4}{9}\right) \times \left(\frac{8}{9}\right) \times \left(\frac{16}{9}\right) \times \left(\frac{64}{9}\right) \times \left(\frac{256}{9}\right) = 256 \rightarrow a^5 = 256 \rightarrow a = 4$

الف) $a_4 = ? \rightarrow a_3 = a \rightarrow 4$

ب) $a_1 \times a_5 = ? \rightarrow \frac{4}{9} \times \frac{256}{9} \rightarrow \frac{1024}{81} \rightarrow 12.63$

$\left(\frac{a}{2}\right) / \left(\frac{5\sqrt{2}}{2}\right) / \left(\frac{b}{2}\right) \rightarrow b^2 = a \times c \rightarrow \left(\frac{5\sqrt{2}}{2}\right)^2 = 2^a \times 2^b \rightarrow 25 = 2^{a+b} \rightarrow a+b = 5$

الف) $a, b, c = ? \rightarrow b = \frac{a+c}{2} \rightarrow \frac{5}{2} = \frac{2+8}{2}$

هندس $\begin{cases} ar = 1-x \\ av = n \rightarrow ar q^4 = n \rightarrow (1-x) q^4 = n \rightarrow q^4 = \frac{n}{1-x} \\ a_{11} = x+1 \rightarrow a_{11} = ar q^4 \rightarrow x q^4 = x+1 \rightarrow q^4 = \frac{x+1}{x} \end{cases} \rightarrow \frac{n}{1-x} = \frac{x+1}{x} \rightarrow n^2 = (1-x)(1+x)$

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

$\frac{\sqrt{2}}{2}$ درستی

فاز صالحی فیل و فیلان (a_1, aq, aq^2, aq^3) $a_1 + a_2 = 28 / a_2 + a_3 = 14 \rightarrow a + aq^2 = 28 \rightarrow a(1 + q^2) = 28$ $aq + aq^2 = 14 \rightarrow aq(1 + q) = 14$ $\frac{a(1 + q^2)}{aq(1 + q)} = \frac{28}{14}$ $\frac{(1 + q)(1 - q + q^2)}{q(1 + q)} = \frac{2}{q} \rightarrow 1 - q + q^2 = 2q \rightarrow q^2 - 3q + 1 = 0$ $\Delta = b^2 - 4ac = 9 - 4 = 5$ $x = \frac{-b \pm \sqrt{\Delta}}{2a} \rightarrow \frac{3 \pm \sqrt{5}}{2}$ $q = \frac{3 + \sqrt{5}}{2} \rightarrow a = \frac{28}{1 + q^2} = \frac{28}{1 + \frac{16 + 12\sqrt{5} + 5}{4}} = \frac{28}{\frac{21 + 12\sqrt{5}}{4}} = \frac{112}{21 + 12\sqrt{5}}$ مطلوبه: $\{1, 3, 9, 27\}$	$a_1 + a_2 + a_3 = 13 \rightarrow \frac{r}{q} + r + rq = 13 \rightarrow r + r + rq = 13q \rightarrow rq^2 - 10q + r = 0$ $a_1 \times a_2 \times a_3 = 27 \rightarrow \frac{r}{q} \times r \times rq = 27 \rightarrow r^3 = 27 \rightarrow r = 3$ $\Delta = b^2 - 4ac = 100 - 36 = 64$ $x = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{10 \pm 8}{2} \rightarrow \frac{18}{2} = 9$ $q = \frac{r}{a} = \frac{3}{1} = 3$ مطلوبه: $\{1, 3, 9\}$	$a_n = 2, 4, 18, \dots \rightarrow q = 3$ انف: $S_n = a_1 \left(\frac{q^n - 1}{q - 1} \right) \rightarrow S_1 = 2 \left(\frac{3^1 - 1}{3 - 1} \right) = 2$ مطلوبه: $(2 \times 4 \times 18)^5 = (144)^5$	a, aq, aq^2 $aq - a = a(q - 1)$ $aq^2 - aq = aq(q - 1)$ $aq^3 - aq^2 = aq^2(q - 1)$ مطلوبه: $! \text{ لایحه}$	$S_n = \frac{n}{2} (2a_1 + (n-1)d) \rightarrow S_n = a_1 + (a_1 + d) + \dots + (a_1 + (n-1)d)$ $qS_n = n(a_1q + (n-1)dq) \rightarrow S_n = \frac{n}{2} (a_1q + (n-1)dq)$ $S_n = a \left(\frac{q^n - 1}{q - 1} \right) \rightarrow S_n q = aq + aq^2 + aq^3 + \dots + aq^n$ $qS_n - S_n = aq^n - a \rightarrow S_n(q - 1) = a(q^n - 1) \rightarrow S_n = a \left(\frac{q^n - 1}{q - 1} \right)$ مطلوبه: $! \text{ لایحه}$
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