

19, 25

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۱۴ کلاس دهم	شماره
$a_n = \frac{1}{r} \times r^{n-1} \rightarrow a_{10} = \frac{1}{r} \times r^9 = r^8 = 252 \quad \checkmark$ $\frac{a_{11}}{a_{10}} = r \xrightarrow{r=2} r^8 = 12 \quad \checkmark$ $128 = \frac{1}{r} \times r^{n-1} \rightarrow r^8 = r^{n-1} \rightarrow n=9 \quad \checkmark$	الف) ۲ ب) ۱ ج) ۳ د) ۴
$r^3 = \frac{a_1}{a_5} = \frac{94}{12} = 8 \rightarrow r=2 \quad \checkmark$ $a_{10} = a_1 \times r^9 = 94 \times 2^9 = 1216 \quad \checkmark$	الف) ۲ ب) ۳
$\frac{a_{10}}{r^9} \times \frac{a_{10}}{r^9} \times a_{10} \times a_{10} \times a_{10} r^9 = a_{10}^5 = 243 \rightarrow a_{10} = 3 \quad \checkmark$ $\frac{a_{10}}{r^9} \times a_{10} r^9 = a_{10}^2 = r^9 = 9 \quad \checkmark$	الف) ۲ ب) ۳
$r^a, r^{\frac{a}{r}}, r^b \rightarrow \frac{r^{\frac{a}{r}}}{r^a} = \frac{r^b}{r^{\frac{a}{r}}} \rightarrow r^{\frac{a}{r}-a} = r^{\frac{b-a}{r}}$ $\Rightarrow \frac{a}{r} - a = b - \frac{a}{r} \rightarrow a+b=a$ $r^{\frac{a+b}{r}} = \frac{a+b}{r} = \frac{5}{r} = 2.5 \quad \checkmark$	الف) ۲ ب) ۳
$a_v^2 = a_u \times a_{11} \rightarrow u^2 = (u+1)(1-u)$ $\rightarrow u^2 = 1 - u^2 \rightarrow 2u^2 = 1 \rightarrow u^2 = \frac{1}{2} \rightarrow u = \pm \frac{\sqrt{2}}{2}$ خلاق و قوی باشید!	الف) ۲ ب) ۳ ج) ۴ د) ۵

$a_1 + a_4 = 11 \rightarrow a_1(1+q^3) = 11 \rightarrow \frac{a_1(1+q^3)}{a_1(1+q)} = \frac{11}{9(1+q)} = \frac{11}{12}$ $a_2 + a_5 = 14 \rightarrow a_2(1+q) = 14 \rightarrow \frac{a_2(1+q)}{a_1(1+q)} = \frac{14}{9(1+q)}$ $\rightarrow 11 - 11q + 14q^3 = 14q \rightarrow 14q^3 - 30q + 11 = 0 \rightarrow 14q^3 - 20q + 11 = 0 \rightarrow q^3 - 20q + 11 = 0$ $\rightarrow q = 1, 2 \rightarrow q = 1, 2, \frac{1}{2} \rightarrow q = 3, \frac{1}{3} \rightarrow \text{در هر دو صورت مقدار عددی برابر است}$	(2)
$a_1 \times a_2 \times a_3 = 27 \rightarrow \frac{a_1}{x} \times a_2 \times a_3 \times x = 27 \rightarrow a_1 = 3$ $a_1 + a_2 + a_3 = 14 \rightarrow a_1 + a_2 = 10 \quad , \quad a_1 \times a_2 = 9 \rightarrow a_1 = 1, a_2 = 9$ $a_1 = 9 \quad a_2 = 1$ 1, 3, 9 9, 3, 1	(1, 2)
$S_{10} = 1 \times \left(\frac{1^{10} - 1}{1 - 1} \right) = 1 \times \frac{1^{10} - 1}{1 - 1} = 1^{10} - 1 = 0$ $a_1 \times a_2 \times a_3 \times \dots \times a_{10} = \sqrt{(a_1 \times a_{10})^{10}} = \sqrt{(1 \times 1)^{10}} = (1 \times 1)^5 = 1$	(2)
$a_1, a_1q, a_1q^2, a_1q^3, \dots \rightarrow a_1q - a_1, a_1q^2 - a_1q, a_1q^3 - a_1q^2, \dots$ $\rightarrow a_1(q-1), a_1q(q-1), a_1q^2(q-1), \dots$ $\rightarrow \text{نسبت} = q$ $\rightarrow \text{نسبت} = \frac{a_1(q-1)q}{a_1(q-1)} = q$	(4)
$S_n = a_1 + a_2 + a_3 + \dots + a_n \rightarrow \text{می دانیم } a_1 + a_n = a_2 + a_{n-1} = \dots = a_{\frac{n}{2}} + a_{\frac{n}{2}+1}$ $\Rightarrow \frac{n}{2}(a_1 + a_n) = \frac{n}{2}(2a_{\frac{n}{2}+1}) \Rightarrow a_{\frac{n}{2}+1} = \frac{a_1 + a_n}{2}$ $S_n = a_1 + a_1q + a_1q^2 + \dots + a_1q^{n-1} \xrightarrow{\times q} S_nq = a_1q + a_1q^2 + a_1q^3 + \dots + a_1q^n$ $\rightarrow S_n(q-1) = a_1(q^n - 1) \rightarrow S_n = a_1 \left(\frac{q^n - 1}{q - 1} \right)$	(2)