

۱۹, ۲۵

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

الف)  $a_{10} = \frac{1}{r} \times r^{10-1} = \frac{1}{r} \times r^9 = \frac{a_{11}}{r} = 254$  ✓  $q=2$   $a_n = \frac{1}{r} \times r^n, \dots$

ب)  $\frac{a_{14}}{a_{11}} = \frac{a_1 r^{14}}{a_1 r^{11}} = r^3$  و  $q=2 \rightarrow r^3 = 16$  ✓

ج)  $a_1, x, a_{10}$   
 $\frac{1}{r}, x, 254 \rightarrow x^r = 254 \times \frac{1}{r} = 10^2 \times \frac{1}{r} \rightarrow x = \sqrt[10]{10^2 \times \frac{1}{r}} = 10^{\frac{2}{10}} \times r^{-\frac{1}{10}}$  ✓

د)  $a_1 r^{n-1} = 128 \rightarrow \frac{1}{r} \times r^{n-1} = 128 \rightarrow n = 9$  ✓

$a_5 = 12$   $a_n = 94$

$\frac{a_n}{a_5} = \frac{94}{12} \rightarrow \frac{a_1 r^n}{a_1 r^5} = 8 \rightarrow r^5 = 8 \rightarrow r = 2$

$a_{10} = a_1 r^9 \rightarrow 94 \times 2^9 = 94 \times 512 = 48128$  ✓

$a_1 \times a_2 \times a_3 \times a_4 \times a_5 = r^5 r^5$   
 $a_1 \times a_5 = r^5$

$(a_1 \times a_5)^r \times a_3 = r^5 r^5$   
 $(a_1 \times a_5) (a_3)^r = r^5$  ✓

$(a_1)^r (a_5)^r \times a_3 = r^5$   
 $(a_1)^r (a_5)^r \times a_3 = r^5$  ✓

$(\sqrt{r})^r = r^{\frac{r}{2}} \rightarrow r^{\frac{r}{2}} = r^{\frac{a+b}{2}} \rightarrow r^{\frac{r}{2}} = r^{\frac{a+b}{2}} \rightarrow a+b = r$

$a+b = r$   $\begin{cases} a=0, b=r \\ a=1, b=r-1 \\ a=r, b=0 \end{cases}$

$\rightarrow 1, \sqrt{r}, r \rightarrow x = \frac{1+r}{2} = \frac{a}{2}$  ✓

$x^r = (1-x)(1+x) \rightarrow x^r = 1-x^2 \rightarrow 2x^r = 1 \rightarrow x^r = \frac{1}{2} \rightarrow x = \sqrt[r]{\frac{1}{2}}$  ✓

همیشه  $q^r < 0$  و  $x < 0$

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| $a_1 + a_2 = r\lambda \rightarrow a_1 + a_1 q^r = r\lambda \rightarrow a_1(1+q^r) = r\lambda \Rightarrow \frac{a_1(1+q^r)}{a_1(1+q)} = \frac{r\lambda}{1r} \Rightarrow$<br>$a_1 + a_2 = 1r \rightarrow a_1 q + a_1 q^r = 1r \rightarrow a_1 q(1+q) = 1r$<br>$1+q^r = r\lambda$ و $1+q = 1r$ , $a_1(1+q^r) = r\lambda \Rightarrow a_1(r\lambda) = r\lambda \rightarrow \boxed{a_1 = 1}$<br>$q = r$<br>$1, r, q, \boxed{rV}$ $\rightarrow$ $\text{نسبت مرتبه}$<br>$a_1, a_2, a_3, a_4$                                                                                                                                                                                                                                                                                                                                                                                                                | <div style="text-align: right;">(2)</div> <div style="text-align: right;">6</div>                                                                                                                                                                          |
| $\frac{a}{q} \times a \times aq = rV \rightarrow a^3 = rV \rightarrow \boxed{a = r}$ ✓<br>$\frac{r}{q} + r + rq = 1r \rightarrow r(\frac{1}{q} + 1 + q) = 1r \rightarrow \frac{1}{q} + 1 + q = \frac{1r}{r} \rightarrow \frac{1}{q} + q = \frac{1r}{r} - 1$<br>$\rightarrow \frac{1}{q} + q = \frac{10}{r} \rightarrow \boxed{q = r}$ $\xrightarrow{\text{نسبت مرتبه}} \frac{1}{r}, r, q$<br><div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <math>q = \frac{1}{r}</math> </div> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <math>1, r, q</math><br/> <div style="display: flex; justify-content: space-around; width: 100%;"> <span>(1)</span> <span>(2)</span> <span>(3)</span> </div> </div> <div style="border: 1px solid blue; border-radius: 10px; padding: 5px; margin-left: 10px;"> <math>q, r, 1</math> </div> </div> | <div style="text-align: right;">(1,2)</div> <div style="text-align: right;">7</div>                                                                                                                                                                        |
| $a_n = r, q, 1, \dots \rightarrow q = r$<br>الف) $S_{10} = a_1(\frac{q^{10}-1}{q-1}) = K(\frac{r^{10}-1}{r-1}) = r^{10} - 1$ ✓<br>ب) $P_i = \sqrt{(a_1 \times a_{10})^{10}} \rightarrow (a_1 \times a_{10})^5 = (r \times q)^5 = (r \times r)^5 = (r^2)^5 = (r^2)^5$ ✓                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <div style="text-align: right;">(2)</div> <div style="text-align: right;">8</div>                                                                                                                                                                          |
| $\frac{a}{q}, a, aq, aq^r$<br>$\frac{a}{q} - a = \frac{a(1-q)}{q}$<br>$a - aq = \frac{a(1-q)}{q}$<br>$aq - aq^r = \frac{a(1-q)}{q}$<br>$AC = a^r(1-q)^r = B^r$ $\xrightarrow{\text{نسبت مرتبه}} \frac{B}{A} = \frac{a(1-q)}{\frac{a(1-q)}{q}} = q$ ✓ $\text{نسبت مرتبه}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <div style="text-align: right;">(2)</div> <div style="text-align: right;">9</div>                                                                                                                                                                          |
| $S_n = a_1 + a_2 + a_3 + \dots + a_n$ $\text{نسبت مرتبه}$<br>$(S_n = a + aq + aq^2 + \dots + aq^{n-1})/q$<br>$qS_n = aq + aq^2 + \dots + aq^n$<br>$S_n - qS_n = a - aq^n \rightarrow S_n = \frac{a(1-q^n)}{1-q}$ ✓                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | $S_n = a + a + d + a + rd + \dots + a + (n-1)d + a + (n-1)d$<br>$S_n = a + (n-1)d + a + (n-1)d + \dots + a + d + a$<br>$rS_n = ra + (n-1)d + ra + (n-1)d + \dots + 1$<br>$rS_n = n(ra + (n-1)d)$<br>$S_n = \frac{n}{r}(ra + (n-1)d)$ ✓ $\text{نسبت مرتبه}$ |