

1911var

الف ١٤

الف و نام خانوادگی: آترین نرونی

$$a_1 = \frac{1}{r} \quad q = 2$$

سوال ١

$$a_n = a_1 q^{n-1} \rightarrow a_n = \frac{1}{r} \times 2^{n-1} \rightarrow a_{10} = \frac{1}{r} \times 2^9 = 2 = \underline{256} \rightarrow \text{الف}$$

$$\frac{a_{14}}{a_{13}} = \frac{a_{13} q^r}{a_{13}} = q^r \rightarrow 2^r = 12 \rightarrow \underline{\quad}$$

$$a_4 = a_1 q^3 \rightarrow \frac{1}{r} \times 2^3 = 4 \quad a_{10} = a_1 q^9 = \frac{1}{r} \times 2^9 = 256 \quad b^2 = ac$$

$$\sqrt{a_4 \times a_{10}} = \sqrt{4 \times 256} = 32 \rightarrow \text{ج (باستفاده از قضیه)} \rightarrow \text{ج}$$

$$a_n = a_1 q^{n-1} \rightarrow 128 = \frac{1}{r} \times 2^{n-1} \rightarrow n-1 = 7 \rightarrow n = 8 \rightarrow \underline{\quad}$$

$$\frac{a_n}{a_m} = \frac{a_1 q^n}{a_1 q^m} = q^{n-m} \rightarrow \frac{99}{12} = q^{n-m} \rightarrow q^3 = 1 \rightarrow q = 2$$

سوال ٢

$$a_{10} = a_1 \times q^9 \rightarrow 99 \times 12 = \underline{1188}$$

$$a_1 q^6 = 2 \times 2 \rightarrow (a_1 q^3)^2 = 2 \times 2 \rightarrow a_1 q^3 = 2$$

سوال ٣

$$\text{الف}) \rightarrow a_{10} = a_1 q^9 = \underline{36}$$

$$\text{ب}) \rightarrow a_1 \times a_{10} = a_1^2 q^9 = (a_1 q^3)^3 \rightarrow 3^3 = \underline{27}$$

سوال ۴) : $b^r = ac \rightarrow (\sqrt[r]{ac})^r = r^a \times r^b \Rightarrow r^a = r^{a+b}$

$\Rightarrow a+b=w$

b, a حسابی : $\frac{a+b}{r} = \frac{w}{r}$

سوال ۵) a_r, a_r, a_{r+1} $\frac{a_{r+1}}{a_r} = \frac{a_r}{a_{r-1}} \rightarrow a_r^r = a_{r-1} \times a_{r+1}$

فصل ۱۲ در صفحه ۱

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

۱۱۷۵۵

سوال ۶) $a_1 + a_1 q^r = r1 \rightarrow a_1(1+q^r) = a_1(1+q)(1-q+q^r)$

$a_1 q + a_1 q^r = r1 \rightarrow a_1 q(1+q)$

$\frac{a_1(1+q)(1-q+q^r)}{a_1 q(1+q)} = \frac{1-q+q^r}{q} = \frac{r1}{1r} = \frac{r}{r} \rightarrow r q = r - r q + r q^r$

$\rightarrow r q^r - 10 q + r = 0 \rightarrow q = \frac{-(-10) \pm \sqrt{100 - 4(r)(r)}}{r \times r} = \frac{10 \pm \sqrt{4r}}{r} \rightarrow$

$\begin{cases} \frac{11}{r} = r \\ \frac{r}{r} = \frac{1}{r} \end{cases}$

$\Rightarrow \textcircled{1} a_1(1+r^r) = r1 \rightarrow a_1 = 1$ $1, r, q, r^2, \dots$

$\textcircled{2} a_1(1+(\frac{1}{r})^r) = r1 \rightarrow a_1 = r^r$ $r^r, q, r, 1, \dots$

$\max = r^r$

$$a + aq + aq^r = 11^r$$

↓

$$a \times aq \times aq^r = a^r q^r = (aq)^r = 11^r$$

$$aq = 11 \leftarrow$$

سوال (5)

$$\frac{11}{q} + 11 + 11q = 11^r \rightarrow \frac{11 + 11q^r}{q} = 11 \rightarrow 11q^r - 11q + 11 = 0$$

$$q = \frac{-(-11) \pm \sqrt{11^2 - 4(11)(11)}}{2 \times 11} = \frac{11 \pm \sqrt{121}}{22} \begin{cases} \frac{11}{22} = \frac{1}{2} \\ \frac{22}{22} = 1 \end{cases} \left\{ \begin{array}{l} 1, 11, 11 \\ 11, 11, 1 \end{array} \right.$$

$$S_{10} = x \left(\frac{11^{10} - 1}{11 - 1} \right) = 11^{10} - 1 \rightarrow \text{الف}$$

سوال (1)

$$\text{حاصل ضرب: } a^{10} q^{1+2+\dots+9} = a^{10} q^{45} = (a^2 q^9)^{10} \rightarrow (11 \times 11^9)^{10}$$

$$a, aq, aq^r, aq^{r^2}, \dots$$

سوال (9)

$$(aq - a), (aq^r - aq), (aq^{r^2} - aq^r), \dots$$

$$a_1 = a(q-1) \xrightarrow{\times q} a_2 = a(q-1)q \xrightarrow{\times q} a_3 = a(q-1)q^r$$

$$\text{مجموعه} = q/$$

الف) $S_n = a_1 + (a_1 + d) + (a_1 + 2d) + \dots + (a_n - 2d) + (a_n - d) + a_n$ (10 دانه)

$\overbrace{a_1 + a_n}^{a_1 + a_n}$
 $\underbrace{\quad \quad \quad}_{a_1 + a_n}$
 $a_1 + a_n$

$$S_n = (a_1 + a_n) \times \frac{n}{2} = \frac{n}{2} (a_1 + a_1 + (n-1)d) = \frac{n}{2} (2a_1 + (n-1)d)$$

← متوسطی دانه

ب) $a + \cancel{aq} + \cancel{aq^2} + \dots + \cancel{aq^{n-1}} \rightarrow S_n$

$\quad - \quad | \quad \cancel{aq} + \cancel{aq^2} + \cancel{aq^3} + \dots + \cancel{aq^n} \rightarrow S_n \times q$

$$a - aq^n = S_n - qS_n$$

$$a(1 - q^n) = S_n(1 - q) \rightarrow S_n = a \left(\frac{1 - q^n}{1 - q} \right)$$