

۱۹, ۷۵

نام و نام خانوادگی: ... پاسخنامه تشریحی تکلیف شماره ۱۱ ... کلاس: ...

$a_n = \frac{1}{p}$ و $a_1 = \frac{1}{p}$ و $a_n = a_1 \times q^{n-1}$
 $a_n = \frac{1}{p} \times p^{n-1} = p^{n-1}$ (الف) (۲)
 $a_{10} = \frac{1}{p} \times p^9 = p^8$ (ب) (۲)
 $\frac{a_{14}}{a_{13}} = q^k = p^k = 14$ (ج) (۲)
 $\sqrt{\frac{a_k \times a_{10}}{a_v \times a_v}} = a_v = \frac{1}{p} \times p^v = p^{v-1}$ (د) (۲)

$\frac{a_1}{a_1} = \frac{a_4}{1^4} = q^3 = 1$ (الف) (۲)
 $q^4 \times a_1 = a_{10} = 94 \times 1^4 = 94$ (ب) (۲)

$a_1 \times a_2 \times a_3 \times a_4 \times a_5 = p^4 = (a_3)^4 = 16$ (الف) (۲)
 $\Rightarrow a_3 = 2$ (ب) (۲)

$(\sqrt[p]{p})^n = p^a \times p^b = p^{a+b} = p^a$ (الف) (۲)
 $a+b=a$ (ب) (۲)

$\frac{a+b}{p} = \frac{a}{p} = 1/a$ (الف) (۲)

$a_p = 1-n$ $a_v = n$ $a_{11} = 1+n$ $a_p \times a_{11} = (a_v)^2$ (الف) (۱, ۷۵)
 $n^N = (1-n)(1+n) = 1-n^2 \Rightarrow 1-n^2 = 1$ (ب) (۲)
 $\Rightarrow n = \pm \sqrt{\frac{N}{2}}$ (ج) (۲)
 $\frac{\sqrt{N}}{2}$, $-\frac{\sqrt{N}}{2}$ (د) (۲)

$$a_1 + a_r = a(1+q^r) = 11 \quad a_r + a_{2r} = aq(1+q) = 12$$

$$\frac{a(1+q^r)}{a(1+q)} = \frac{11}{12} = \frac{(1+q^r)}{(1+q)}$$

$$q(1+q) = \frac{12}{11} \Rightarrow 11q^2 - 10q + 11 = 0 \Rightarrow q = \frac{10 \pm \sqrt{100-34}}{22} = \frac{10 \pm \sqrt{66}}{22}$$

$$\frac{a}{q} \times a \times aq = a^3 = 11 \Rightarrow a = \sqrt[3]{11}$$

$$\frac{11}{q} + 11 + 11q = 11 \Rightarrow 11q^2 + 11q + 11 = 11 \Rightarrow 11q^2 + 11q = 0 \Rightarrow q = 0 \text{ or } q = -1$$

$$a_n = 1, q, 11, \dots \quad S_{10} = 1 \times \frac{11^{10}-1}{11-1} = \frac{11^{10}-1}{10}$$

$$a_n = a, aq, aq^2, \dots, aq^{n-1}$$

$$a_n' = a, a(q-1), aq(q-1), \dots, aq^{n-1}(q-1)$$

$$S_n = \frac{n}{2}(2a + (n-1)d)$$

$$a_n = a, a+d, a+2d, \dots, a+(n-1)d$$

$$S_n = \frac{n}{2}(2a + (n-1)d) = S_n$$

جواب قسمت ب

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$$S_n = a + aq + aq^2 + \dots + aq^{n-1}$$

$$S_n \times q = aq + aq^2 + aq^3 + \dots + aq^n$$

$$S_n - S_n \times q = a - aq^n = a(1 - q^n)$$

$$S_n(1 - q) = a(1 - q^n)$$

$$\Rightarrow S_n = \frac{a(1 - q^n)}{(1 - q)} = a \times \frac{(q^n - 1)}{(q - 1)} \quad \checkmark$$