

تکلیف ۱۴

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سایه داری

$$a_n = \frac{1}{r}, 1, 2, \dots$$

$$\frac{1}{r}(q^1) = \frac{1}{r}(r^1) = 254 \quad a_{10} = ? \quad (الف)$$

$$\frac{\frac{1}{r}(r^1)}{\frac{1}{r}(r^1)} = r^1 = 14$$

$$\frac{a_{14}}{a_{13}} = 9 \quad (ب)$$

$$a_2 \cdot a_{10} = \frac{1}{r^2} \cdot \frac{1}{r^1} = \frac{1}{r^3} = 25$$

$$a_{10} \cdot a_2 = 25 \rightarrow r^9 = 25$$

$$t_9 = 128$$

جواب نهایی

$$128 = \frac{1}{r}(r^{n-1})$$

$$\rightarrow 128 = r^{-1} \times r^n \times r^{-1} = r^n \times r^{-2} = 128 \rightarrow \frac{r^n}{r^2} = 128 \rightarrow r^n = 128 \times r^2 = r^9 \Rightarrow n=9$$

$$a_5 = 12 \quad a_1 = 94 (r)$$

$$\frac{a_1}{a_5} = a_r = \frac{94}{12} = 1 = aq^r$$

$$a_1 a_2 \times a_3 \times a_4 \times a_5 = 252$$

$$a_3 = aq^2 = 10 \quad (الف)$$

$$a_3 = ? \quad (ب)$$

$$a_1 \times a_5 = ?$$

$$(aq^r)^5 = aq^{10} = 252 \rightarrow aq^r = \sqrt[5]{252} = 3$$

$$a^2 q^8 = (aq^r)^2 \times (3)^2 = 9$$

$$\frac{a+b}{r} = ?$$

$$\text{or via } r^a, \varepsilon \sqrt{r}, r^b$$

$$\varepsilon \varepsilon$$

$$r^a \times r^b = r^c \rightarrow r^{a+b} = r^c \rightarrow a+b = c \rightarrow \frac{a+b}{r} = \frac{c}{r} = \frac{r}{r} = 1$$

$$a_r = 1 - x$$

$$a_v = x$$

$$a_{11} = x+1$$

$$(1)$$

$$x = ?$$

$$\sqrt{(1+x)(1-x)} = x \rightarrow \sqrt{x^2 - 1} = x \rightarrow x-1 = x$$

$$x =$$

$$a_1 + a_\varepsilon = r \wedge$$

$$(4)$$

$$a_r + a_p = 1r$$

$$a_1 + a_r + a_p + a_\varepsilon = \varepsilon_0 \rightarrow s_\varepsilon = \frac{a(q^\varepsilon - 1)}{q - 1} = \varepsilon_0 \rightarrow aq^\varepsilon - a = \varepsilon_0 q - \varepsilon_0$$

$$a_1 + a_r + a_p = 1r \rightarrow a_1 + a_r = 10$$

$$(V)$$

$$a_1 \times a_r \times a_p = rV \rightarrow aq^r = rV \rightarrow aq = \sqrt[r]{rV} \approx aq = r$$

$$a_1 =$$

$$a_r = r$$

$$a_p =$$

$$r, 4, 11$$

$$x^r, x^4$$

$$s_{10} = \frac{x(4^{10} - 1)}{4 - 1} = 4^{10} - 1 \approx 290 \varepsilon 1$$

$$p_{10} = (r \times r^4 \times r)^5 \rightarrow (r^r \times r^4)^5 = r^{10} \times r^{\varepsilon 5}$$

$$\Rightarrow 2a - \frac{a}{q}, aq - a, aq^r - aq, aq^r - aq^r, \dots$$

$$(9)$$

$$\Rightarrow a = a, aq^r, aq^r, aq^\varepsilon, \dots$$

(10

$$a_1, a_2, a_3, a_4, \dots, a_n$$

(الف

$$a + (a+d) + (a+2d) + (a+3d) + \dots + (a+(n-1)d)$$

$$na + d(1+2+3+\dots+n-1) \rightarrow na + d \frac{(n-1)n}{2} = \frac{n}{2} (2a + (n-1)d)$$

(ب

$$S = a_1 + a_2 + a_3 + \dots + a_n$$

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

$$Sq = \cancel{aq} + \cancel{aq^2} + \dots + \cancel{aq^{n-1}} + aq^n$$

$$S - Sq = a - aq^n \rightarrow S(1-q) = a(1-q^n)$$

$$\Rightarrow S = \frac{a(1-q^n)}{1-q}$$