

$$a + aq + aq^2 = 21 \rightarrow a(1 + q + q^2) = 21$$

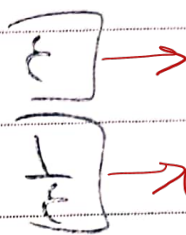
$$a \times aq \times aq^2 = 48 \rightarrow (aq)^3 = 48 \rightarrow aq = \sqrt[3]{48} \rightarrow a = \frac{\sqrt[3]{48}}{q}$$

$$\frac{\sqrt[3]{48}}{q} (1 + q + q^2) = 21 \rightarrow \sqrt[3]{48} (1 + q + q^2) = 21q$$

$$\sqrt[3]{48} + \sqrt[3]{48}q + \sqrt[3]{48}q^2 = 21q \rightarrow \sqrt[3]{48}q^2 - 14q + \sqrt[3]{48} = 0$$

$$\Delta = (14)^2 - 4(\sqrt[3]{48} \times \sqrt[3]{48}) = 224$$

$$q = \frac{14 \pm \sqrt{224}}{2} = \frac{14 \pm 14}{2} \rightarrow q \rightarrow \begin{cases} 1 \\ \frac{1}{2} \end{cases}$$



علیه

قانون صیقل

۱۱۵

$$b^2 = ac$$

$$\sqrt[3]{48} = (x^2 + \sqrt[3]{48})(x^2 - 2)$$

$$\sqrt[3]{48} = x^2 - 2x^2 + \sqrt[3]{48}x^2 - 2$$

$$x^2 - 2x^2 - 2 = 0 \rightarrow x^2 = 2 \rightarrow 2^2 - 2 \cdot 2 - 2 = 0$$

$$(2 + 2)(2 - \sqrt[3]{48}) \rightarrow (x^2 + 2)(x^2 - \sqrt[3]{48})$$

$$x^2 = -2x$$

$$x = \pm 2 \leftarrow x^2 = \sqrt[3]{48}$$

$$x = +2 \rightarrow 2, \sqrt[3]{48}, 1 \rightarrow q = 2 \checkmark \rightarrow q > 0$$

$$x = -2 \rightarrow 2, -\sqrt[3]{48}, 1 \rightarrow q = -2 \times$$

حاصل ضرب

~~سوال ۱۰۰~~

$$1 + q + q^2 + q^3 + q^4 = \frac{121}{11}$$

۲

$$a(1 + q + q^2 + q^3 + q^4) = S_n$$

$$S_n \times \frac{1}{11} \times \frac{121}{11} \Rightarrow S_n = 344$$

ب. لیس

$$b = \frac{a+c}{2} \rightarrow b = \frac{40}{2} \rightarrow b = 20$$

۳

ج. لیس

$$b^2 = ac \rightarrow b^2 = 40 \rightarrow b = \pm 2\sqrt{10}$$

۴

$$A + B = 34, a \pm 1 \Rightarrow \begin{cases} 30, 4 \\ 32, 2 \end{cases}$$

جواب (۲)

-۲۴, -۹۰, ...

$$\rightarrow \frac{-90}{-24} = \frac{15}{4}$$

$$+ \frac{1}{4}$$

$$a_n = an + b$$

$$a_n = \frac{1}{4}n - \frac{90}{4}$$

۵

$$a_{101} = \frac{101}{4} - \frac{90}{4} = \frac{11}{4} = 2.75$$

۱۲ و ۱۸

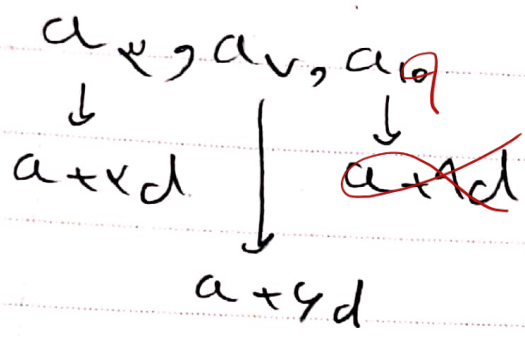
$$a_n = aq^n = 1$$

سوال ۱۰۰

۶

$$12 \wedge 18 = 1 \rightarrow q^n = \frac{1}{12 \wedge 18} \rightarrow q = \frac{1}{12}$$

جواب



$a+nd$

①

4

$b^2 = ac \rightarrow (a+3d)^2 = (a+d)(a+5d)$

$a+nd$

$a^2 + 6ad + 9d^2 = a^2 + 4ad + 5ad + 5d^2$

$rad$

$14d^2$

$12d + ad = 0$

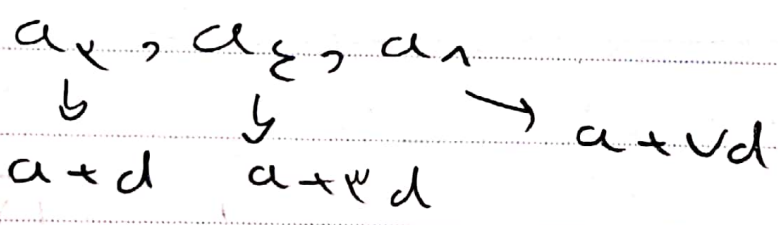
دو طرفه مساوی  
در دو طرفه مساوی

$d(12d+a) = 0$

$d=0 \rightarrow$

$12d^2 - 2ad = 0$

$d = \frac{-a}{12}$



②

4

$b^2 = ac \rightarrow (a+2d)^2 = (a+d)(a+3d)$

$4ad + a^2 + 4d^2 = a^2 + 3ad + ad + 3d^2$

$2d^2 - 2ad = 0 \rightarrow 2d(d-a) \rightarrow d=0$

$a=d$

$\frac{a_2}{a_1} = \frac{a+d}{a} = \frac{a+a}{a} = 2 = q$

$a_{10} = aq^9 = \frac{1}{2} \times 2^{10} = 128$

مقدار  $a_{10}$

جواب

Arman  
در خود سوال ذکر کرده  
بود

$a = \frac{1}{2}$

$$\begin{array}{ccc} \nu a_\nu & , & \nu a_\nu & , & a_\varepsilon \\ \downarrow & & \downarrow & & \downarrow \\ \nu a_q & & \nu a_q^\nu & & a_q^\nu \end{array}$$

5

$$b = \frac{a+c}{\nu} \implies \nu a_q^\nu \times \frac{\nu a_q + a_q^\nu}{\nu}$$

$$\rightarrow \varepsilon a_q^\nu = \nu a_q + a_q^\nu \rightarrow \cancel{a_q} (\varepsilon q) = \cancel{a_q} (\nu + q)$$

$$\rightarrow \varepsilon q = \nu + q^\nu \rightarrow q^\nu - \varepsilon q + \nu = 0$$

$$(q - \nu)(q - 1)$$

$$q = \nu, \quad q = 1$$

$q = \nu$  <sup>جواب</sup> چون گفته غیر است

$$\nu, \frac{\nu}{\varepsilon}, \dots$$

$\downarrow$   
 $\nu - 1$

$$a_n = -\frac{1}{\varepsilon} n + \frac{1}{\varepsilon} \quad \checkmark$$

$$a_\varepsilon = -\frac{\varepsilon}{\varepsilon} + \frac{1}{\varepsilon} = \frac{1-\varepsilon}{\varepsilon} \quad \checkmark$$

$$a_1 = -\frac{1}{\varepsilon} + \frac{1}{\varepsilon} = 0 \quad \checkmark$$

$$a_{1-\nu} = -\frac{1-\nu}{\varepsilon} + \frac{1}{\varepsilon} = \frac{\nu}{\varepsilon} \quad \checkmark$$

5104

$$\frac{a}{x} + x, \frac{1}{x} + x, -1 + x$$

$$b^2 = ac \rightarrow \left(\frac{1}{x} + x\right)^2 = \left(\frac{a}{x} + x\right)(-1 + x)$$

$$\rightarrow x^4 + \frac{x}{x} + \frac{1}{x^2} = x^4 + \frac{ax}{x} - \frac{a}{x} - x$$

$$\rightarrow x^4 + \frac{x}{x} + \frac{1}{x^2} = x^4 + \frac{x}{x} - \frac{a}{x}$$

$$\frac{x}{x} = -\frac{x}{x} \rightarrow x = -\frac{x}{x}$$

$$\frac{\frac{1}{x} + x}{\frac{a}{x} + x} = \frac{-a}{-x} = \frac{x}{a} = \frac{x}{a}$$

جواب  $9 = \frac{x}{a}$

$$a + a_8 + a_v = a + aq^8 + aq^4 = v^8$$

$$\frac{a(1 + q^8 + q^4)}{a} = \frac{v^8}{a}$$

$$1 + q^8 + q^4 = \frac{v^8}{a}$$

$$a = \frac{v^8}{1 + q^8 + q^4}$$

$$A_1 = a$$

$$A_8 = a + d = aq^8$$

$$A_{10} = a + 9d = aq^4$$

$$q = 1$$

$$va = v^8$$

$$a = \frac{v^8}{v}$$

$$d = aq^8 - a$$

$$d = aq^8 - a = a(q^8 - 1) \quad \frac{v^8}{v} - \frac{v^8}{v} = 0$$

$$a + 9(a(q^8 - 1)) = aq^4$$

$$1 + 9q^8 - 9 = q^4 \rightarrow q^8 - 9q^4 + 1 = 0$$

$$\rightarrow x = q^4 \Rightarrow x^2 - 9x + 1 = 0$$

$$(x-1)(x-1)$$

$$x^2 = 1 \rightarrow x = 1$$

$$a(1 + 1 + 1) = v^8$$

$$a(1 + 1 + 1) = v^8 \rightarrow a = 1$$

$$\text{Arman } d = a(q^8 - 1) = 1(1 - 1) = 0$$

$$\text{جواب } \boxed{d = 0}$$