

$$a_1 + a_2 + a_3 = 21$$

$$a_1 \times a_2 \times a_3 = 42$$

$$\Rightarrow \frac{x}{q} + x + xq = 21 \rightarrow \frac{x}{q} + x + xq = 21 \rightarrow \frac{x}{q} + x + xq = 21 \rightarrow \frac{x}{q} + x + xq = 21$$

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$$\frac{x^2 + x}{1}, \frac{2x}{x}, \frac{x^2 - 2}{2}$$

$$\rightarrow b^2 = ac \rightarrow \frac{x^2 + x}{1} = \frac{2x}{x} \rightarrow x^2 + x = 2 \rightarrow x^2 - 2x - 1 = 0$$

$$\rightarrow x^2 \Rightarrow \frac{x^2 + x}{1} = \frac{2x}{x} \rightarrow \frac{x^2 + x}{1} = \frac{2x}{x} \rightarrow \frac{x^2 + x}{1} = \frac{2x}{x}$$

$$1, x, 2 \rightarrow q = \frac{1}{x}$$

$$S_V = \frac{1(1 - (\frac{1}{x})^2)}{1 - \frac{1}{x}} = \frac{1 \times \frac{12V}{14} \times 14}{\frac{1}{x}} = \left(\frac{12V}{14} \right) \times \frac{1}{\frac{1}{x}} = \frac{12V \times x}{14} = \frac{12V}{14} \times x = \frac{12V}{14} \times x$$

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

$$a = 2 \times 11$$

$$S_5 = \frac{1 - 11^5}{1 - 11} = \frac{1 - 161051}{-10} = \frac{161050}{10} = 16105$$

$$1, -, -, A, -, -, 42 \rightarrow A = \frac{1 + 42}{2} = 21.5$$

$$1, -, -, B, -, -, 42 \rightarrow B = \sqrt{42} = \pm 6.48$$

$$A + B =$$

$$21.5 + 6.48 = 27.98$$

$$\Rightarrow -22, -\frac{95}{2}, \dots \rightarrow d = -\frac{95}{2} + 22 = -\frac{51}{2}$$

$$\Rightarrow 121, a_2, \dots$$

$$a_{100} = aq^9 \Rightarrow -22 + 100 \left(-\frac{51}{2} \right) = aq^9 \rightarrow 1 = aq^9 \rightarrow q^9 = \frac{1}{121} \rightarrow q = \frac{1}{11}$$

$$a + 2d, a + 4d, a + 6d \rightarrow$$

$$a + 12ad + 34d^2 = a + 10ad + 14d^2 \rightarrow 2ad + 20d^2 = 0 \rightarrow d(2a + 20d) = 0$$

$$d = -\frac{1}{10}a$$

$$a+d, a+3d, a+5d \rightarrow \text{جمله هفتمی متوالی و ششمی}$$

(V)

$$a_{10} = \frac{1}{\varepsilon}$$

$$a^x + 4ad + 9d^2 = a^x + 5ad + \varepsilon 9d^2 \rightarrow ad + \varepsilon d^2 = 0$$

$$a = -\frac{\varepsilon d^2}{d} = a = -\varepsilon d$$

$$\frac{a+5d}{a+3d} = \frac{10d}{-d} = -10 = q$$

$$a_{10} = \frac{1}{\varepsilon} \times (-10)^9 = -\varepsilon 10^9 \times \frac{1}{\varepsilon}$$

$$3aq, 2aq^2, aq^3 \rightarrow \text{جمله ششمی و پنجمی و چهارم}$$

(VI)

$$3aq + 2aq^2 = \varepsilon aq^3 \rightarrow 3 + q^2 = \varepsilon q \rightarrow q^2 - \varepsilon q + 3 = 0 \rightarrow q \Rightarrow 14 - 12 = 2 \rightarrow \frac{\varepsilon \pm 2}{2} = \boxed{1, 3}$$

$$2, \frac{1}{\varepsilon}, \dots \rightarrow d = \frac{1}{\varepsilon} - 2 = -\frac{1}{\varepsilon}$$

(VII)

$$\frac{a_{\varepsilon} + x}{2 - \frac{1}{\varepsilon}}, \frac{a_1 + x}{2 - \frac{1}{\varepsilon}}, \frac{a_{12} + x}{2 - \frac{1}{\varepsilon}} \rightarrow \frac{\Delta}{\varepsilon} + x, \frac{1}{\varepsilon} + x, -1 + x$$

$$x^x + \frac{1}{\varepsilon}x + \frac{1}{14} = x^x + \frac{1}{\varepsilon}x - \frac{\Delta}{\varepsilon} \rightarrow \frac{1}{\varepsilon}x + \frac{1}{14} = 0 \rightarrow \frac{1}{\varepsilon}x = -\frac{1}{14} \rightarrow x = \left(\frac{-\frac{1}{14}}{\frac{1}{\varepsilon}} \right) = -\frac{\varepsilon}{14}$$

$$\frac{\frac{\Delta}{\varepsilon} - \frac{\varepsilon}{14}}{-\frac{14}{\varepsilon} = -\varepsilon}, \frac{\frac{1}{\varepsilon} - \frac{\varepsilon}{14}}{-\frac{\varepsilon}{\varepsilon} = -\Delta}, -1, -\frac{11}{\varepsilon}$$

$$\frac{-4/14\Delta}{-\Delta} = \frac{-\Delta}{-\varepsilon} = \boxed{q = 1, 14}$$

$$a_1, a_{\varepsilon}, a_v \text{ متوالی} \Rightarrow a_1, a_r, a_{10} \text{ متوالی}$$

(VIII)

$$a_1 + a_{\varepsilon} + a_v = 12$$

$$a_r - a_1 = \frac{a_{10} - a_r}{\Delta} = d \rightarrow aq^r - a = \frac{aq^4 - aq^r}{\Delta} \rightarrow$$

$$\Delta aq^r - \Delta a = aq^4 - aq^r \rightarrow q^4 - q^r - 1 = 0$$

$$\rightarrow q^r \Rightarrow 11 + 32 = \varepsilon 9 \rightarrow \frac{q \pm 1}{2} = 1, 11 \rightarrow q = 1, 11$$

$$a + aq^r + aq^4 = 12$$

$$a + 11a + 49a = 12 \rightarrow 60a = 12 \rightarrow a = 1$$

$$a + a + a = 12 \rightarrow 3a = 12 \rightarrow a = \frac{12}{3} = 4$$

$$a_1, a_r, a_{10} \rightarrow a, a+d, a+9d = \frac{12}{1} + 10d$$

$$\begin{aligned} 10d = -1 &\rightarrow d = -\frac{1}{10} \\ 10d = 12 &\rightarrow d = \frac{12}{10} \end{aligned}$$