

حل المسألة

$$\epsilon \epsilon = \sqrt{(a_1 \cdot a_2)^2} \Rightarrow a_1 a_2 = \epsilon \epsilon \rightarrow a_1 a_2 = \epsilon \quad \frac{\epsilon}{q} + \epsilon q = 1 \Rightarrow \boxed{q = \frac{\epsilon}{1}} \text{ و } a = 1 \quad (1)$$

$$x^2 + 2x - 1 = \epsilon x \rightarrow x^2 - 2x - 1 = 0 \rightarrow x = \pm 2 \xrightarrow{q > 0} x = 2 \quad (2)$$

$$\text{المسألة: } 1 \text{ و } \epsilon \text{ و } 2 \text{ و } \dots \rightarrow S_V = 1 \left(\frac{1 - (\frac{1}{2})^V}{1 - \frac{1}{2}} \right) = 1 - (\frac{1}{2})^V = 1 - \frac{1}{2^V} = \frac{2^V - 1}{2^V}$$

$$q + q^2 + q^3 + q^4 = \frac{\epsilon^2}{1} \Rightarrow q = \frac{1}{\epsilon} \quad S_D = \sum_{n=0}^{\infty} \left(\frac{1 - (\frac{1}{\epsilon})^0}{\frac{1}{\epsilon}} \right) = \frac{\epsilon}{1 - \epsilon} = \epsilon \text{ و } \epsilon \quad (3)$$

$$q^4 - q^2 = q = \pm 2 \rightarrow A = a_{\epsilon} = +1 \text{ و } -1 \quad (4)$$

$$b = \frac{\epsilon^2}{q} = \frac{2}{1} \rightarrow B = b_{\epsilon} = 2 \text{ و } 1/2 \Rightarrow A+B = 2 \text{ و } 1/2 \quad (5)$$

$$b = \frac{1}{\epsilon} \Rightarrow a_{101} = -2\epsilon + 2\delta = 1 \quad (6)$$

$$\Rightarrow b_{10} = 1 \text{ و } b_1 = 2 \Rightarrow \boxed{q = \frac{1}{2}} \quad (7)$$

$$(a + 2d)(a + 1d) = (a + 1d)^2 \rightarrow a^2 + 3ad + 2d^2 = a^2 + 2ad + d^2 \rightarrow ad + d^2 = 0 \rightarrow d = 0 \text{ و } d = \frac{-a}{1} \quad (8)$$

$$(a + d)(a + 1d) = (a + 1d)^2 \rightarrow 2ad - d^2 = 0 \Rightarrow a = d \quad (9)$$

$$\frac{b_2}{b_1} = \frac{\epsilon d}{2d} = 2 \Rightarrow b_{10} = \frac{1}{\epsilon} \times 2^9 = 2^9 = 128 \quad (10)$$

$$2aq + aq^2 = \epsilon aq^2 \xrightarrow{q \neq 0} \boxed{q = 2 + \sqrt{2}} \text{ و } \boxed{q = 2 - \sqrt{2}} \quad (11)$$

$$a_{\epsilon} = \frac{\delta}{\epsilon} \quad a_{11} = \frac{1}{\epsilon} \quad a_{12} = -1 \rightarrow (x + \frac{\delta}{\epsilon})(x - 1) = (x + \frac{1}{\epsilon})^2$$

$$\Rightarrow \frac{-x}{\epsilon} - \frac{1}{14} = 0 \Rightarrow x = \frac{-1}{\epsilon} \quad \text{المسألة: } -\epsilon \text{ و } -\delta \text{ و } -\frac{2\delta}{\epsilon} \Rightarrow \boxed{q = \frac{\delta}{\epsilon}} \quad (12)$$

$$2a + 10d = 128 \quad aq^2 = a + d \quad 1 + q^2 + q^4 = 128 \Rightarrow q = 2 \Rightarrow \boxed{d = 12} \quad (13)$$