

$$a_n = \frac{1}{r} \times r \times r \times \dots \rightarrow q = r$$

$$a_{10} = a, a^9 = \frac{1}{r} \times r^9 = r^8 = 256 \quad (\text{الف})$$

$$\frac{a_v}{a_r} = \frac{a \cdot a^4}{a \cdot a^2} = a^2 = r^2 = 16$$

$$\left. \begin{array}{l} a_4 = a \cdot a^3 \\ a_{10} = a \cdot a^9 \end{array} \right\} \rightarrow \sqrt{\frac{a_4 \cdot a_{10}}{a_v \cdot a_v}} = a_v = a \cdot a^4 = \frac{1}{r} \times r^4 = r^3 = 32$$

$$128 = a \cdot q^{n-1} \rightarrow 128 = \frac{1}{r} \times r^{n-1} \rightarrow r^{n-1} = 128 \times r = 256 \times r \rightarrow r^{n-1} = 256 \times r \rightarrow n-1 = 8 \rightarrow n = 9 \quad (\text{ب})$$

$$\left. \begin{array}{l} a_1 = 99 \\ a_5 = 12 \end{array} \right\} \rightarrow \frac{a_1}{a_5} = \frac{a \cdot a^0}{a \cdot a^4} = \frac{a}{a^4} = \frac{1}{a^3} = \frac{1}{12} \rightarrow a^3 = 12 \rightarrow a = \sqrt[3]{12} \rightarrow q = r$$

$$a_{10} = a \times q^9 = 99 \times r^9 = 3114$$

$$a_4 = a_r \cdot a_r$$

$$a_1 \times a_2 \times a_3 \times a_4 \times a_5 = r^5 \rightarrow (a_r)^5 = r^5 \rightarrow a_r = r \quad (\text{الف})$$

$$a_4 = a_r \times a_r$$

$$a_1 \times a_5 = a_r \cdot a_r = r \times r = 9 \quad (\text{ب})$$

$$r^a, \sqrt{r}, b^2 \rightarrow (r \sqrt{r})^2 = r^2 \cdot r = r^3 \rightarrow r^3 = r^{a+b} \rightarrow a+b=3$$

$$\frac{a+b}{r} = \frac{3}{r} = 3/5$$

$$a_{n+1} \cdot a_n = a_v \cdot a_v \rightarrow (n+1) \cdot (1-n) = n^2$$

$$a_n = 1-n$$

$$a_v = n$$

$$a_{n+1} = n+1$$

$$1-n^2 = n^2 \rightarrow 2n^2 = 1 \rightarrow n^2 = \frac{1}{2} \rightarrow n = \pm \sqrt{\frac{1}{2}}$$

منفی ننید که قبول چون دنباله هندسی اند ایش بود
 a_n و a_{n+1} هم با هم مرتبط باشند
 بین تنهایی جواب $\sqrt{\frac{1}{2}}$ است

$$\left. \begin{aligned} a_1 + a_2 + \dots + a_n &= aq(1+q+\dots+q^{n-1}) = 1r \\ a_1 + a_2 + \dots + a_n &= a(1+q+\dots+q^{n-1}) = 1r \end{aligned} \right\} \rightarrow \frac{aq(1+q+\dots+q^{n-1})}{aq(1+q+\dots+q^{n-1})} = \frac{1r}{aq(1+q+\dots+q^{n-1})} = \frac{(1+q)(1-q^n)}{a(1-q)} = 1$$

$$1r = 1q + 1q^2 + \dots + 1q^n \rightarrow 1r - 1q = 1q^2 + \dots + 1q^n \rightarrow 1r - 1q = 1q^2 + \dots + 1q^n \rightarrow 1r - 1q = 1q^2 + \dots + 1q^n$$

اگر $q = 1$ $\rightarrow a = 1r \rightarrow a_n = 1r, 1r, 1r, \dots$

اگر $q = \frac{1}{r}$ $\rightarrow a = 1r \rightarrow a_n = 1r, \frac{1}{r}, \frac{1}{r^2}, \dots$

$$a_1 + a_2 + a_3 = 1r \quad a_1 + a_2 + a_3 = 1r \rightarrow a_1 + a_2 + a_3 = 1r \quad a_1 + a_2 + a_3 = 1r$$

$$a_1 + a_2 + a_3 = 1r \rightarrow a_1 + a_2 + a_3 = 1r \quad a_1 + a_2 + a_3 = 1r$$

$$\frac{a_1}{q} + a + aq = 1r \rightarrow \frac{r}{q} + r + ra = 1r \rightarrow \frac{r}{q} + r + ra = 1r \rightarrow \frac{r}{q} + r + ra = 1r$$

اگر $q = 1$ $\rightarrow a_1 = 1 \rightarrow 1, 1, 1$

اگر $q = \frac{1}{r}$ $\rightarrow a_1 = r \rightarrow r, 1, 1$

$$S_n = a \left(\frac{q^n - 1}{(q - 1)} \right) = r \left(\frac{r^n - 1}{r - 1} \right) = r^{n+1} - 1 = 1r - 1 = 1r - 1$$

$$P_n = \sqrt{(a \times q)^n} = (a \times q)^{\frac{n}{2}} = (r \times r)^{\frac{n}{2}} = r \times r^{\frac{n}{2}}$$

$$a_n = \frac{a}{q} + aq, aq^2, aq^3, \dots \quad a^r = a_1 + a_2 \quad a^r(q-1)^r = \frac{a}{q}(q-1) + aq(q-1)$$

$$\rightarrow a - \frac{a}{q} = aq - a, aq^2 - aq, aq^3 - aq^2, \dots$$

$$\frac{a}{q}(q-1), a(q-1), aq(q-1), aq^2(q-1), \dots$$

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

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

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

$$S_n = a + aq + aq^2 + \dots + aq^{n-1} \rightarrow S_n q = aq + aq^2 + aq^3 + \dots + aq^n$$

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

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