

$$\begin{aligned} a_1 + a_2 &= 11 \rightarrow aq^2 + a = 11 & a(1+q^2) &= 11 \\ & & \rightarrow aq(1+q) &= 11 \end{aligned}$$

$$a_2 + a_3 = 12 \rightarrow aq + aq^2 = 12$$

$$\frac{a \times (1+q^2)}{aq(1+q)} = \frac{11}{12} \rightarrow \frac{(1+q^2) \times (1-q+q^2)}{q(1+q)} = \frac{11}{12}$$

$$\rightarrow 12 - 12q + 12q^2 = 11q \rightarrow 12q^2 - 10q + 1 = 0 \quad \Delta = 100 - 48 = 52$$

$$q = \frac{10 \pm \sqrt{52}}{24} \rightarrow \frac{10+1}{12} = \frac{11}{6} \quad \rightarrow \frac{10-1}{12} = \frac{1}{4}$$

$$\begin{aligned} \text{دنباله اول} &= 1, 11, 121, 1331, \dots \\ \text{دنباله دوم} &= 1, 11, 121, 1331, \dots \end{aligned} \rightarrow \text{دنباله سوم} = 1, 11, 121, 1331, \dots$$

$$a_1 \times a_2 \times a_3 = 11 \rightarrow a_1^3 = 11 \quad a_2 = 11$$

$$a_3 = 1, 11, 121, 1331, \dots$$

$$S_n = a_1 \left(\frac{q^n - 1}{q - 1} \right) = \frac{1 \times (11^n - 1)}{11 - 1} = 11^n - 1 \quad (\text{الف-الف})$$

$$(1) \quad (11^n - 1) = (11 \times 11 \times \dots \times 11) - 1 = (11 \times 11 \times \dots \times 11) - 1 = 11^n - 1$$

$$\begin{aligned} \text{دنباله اول} &= 1, 11, 121, 1331, \dots \\ \text{دنباله دوم} &= (11 - 11), (121 - 121), \dots \rightarrow 11(1 - 11), 121(1 - 11), \dots \end{aligned}$$

قد نسبت دنباله همان قدر نسبت دنباله اول کمتر است.

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

$$S_n = a + a + d + a + d + \dots + a + (n-1)d$$

$$S_n = a + (a-1)d + (a-2)d + \dots + a$$

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

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

$$2) S_n = a + aq + aq^2 + \dots + aq^{n-1}$$

$$S_n \times q = aq + aq^2 + \dots + aq^n$$

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

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