

$$a_1 + a_1 q = 11 \rightarrow a_1 + a_1 q^3 = 11 \rightarrow a_1(1+q^3) \rightarrow \frac{11(1+q^3)}{q^3(1+q)} = \frac{11}{11} = 1$$

$$a_1 + a_1 q = 11 \rightarrow a_1 q + a_1 q^3 = 11$$

$$\frac{(1+q)(q^3 - q + 1)}{q(1+q)} = \frac{11}{11} \rightarrow 3(q^3 - q + 1) - 11q \rightarrow 3q^3 - 3q + 3 - 11q = 3q^3 - 14q + 3 = 0$$

$$a_1 + a_1 q + a_1 q^3 = 11 \rightarrow$$

$$a_1 \times a_1 q \times a_1 q^3 = 11 \rightarrow a_1 q^3 = 11 \rightarrow a_1 q = 11 \rightarrow a_1 = 11$$

$$a_1 q = 11 \rightarrow a_1 = 11$$

$$a_1 \left(\frac{q^n - 1}{q - 1} \right) = \frac{q^n - 1}{q - 1} \rightarrow \frac{q^n - 1}{q - 1} = 11$$

$$\frac{q^n - 1}{q - 1} = 11 \rightarrow q^n - 1 = 11(q - 1) \rightarrow q^n - 1 = 11q - 11 \rightarrow q^n = 11q - 10$$

$$a_1, a_1 q, a_1 q^2, a_1 q^3, a_1 q^4$$

$$a_1 q - a_1, a_1 q^2 - a_1 q, a_1 q^3 - a_1 q^2, a_1 q^4 - a_1 q^3$$

$$a_1(q-1), a_1 q(q-1), a_1 q^2(q-1)$$

$$a_n = a_1 + (n-1)d$$

$$a_1 + (a_1 + d) + (a_1 + 2d) + \dots + (a_1 + (n-1)d)$$

$$\rightarrow \frac{(n-1)(n)}{2} = \frac{n^2 - n}{2} \rightarrow n a_1 + \frac{n^2 - n}{2} d \rightarrow \frac{n}{2} (2a_1 + (n-1)d)$$

$$\rightarrow s_n = a_1 + a_1 q + a_1 q^2 + a_1 q^3 + \dots + a_1 q^{n-1} \times q, q s_n = a_1 q + a_1 q^2 + a_1 q^3 + \dots + a_1 q^{n-1} + a_1 q^n$$

$$q s_n - s_n \rightarrow (q-1) s_n = a_1 q^n - a_1 \rightarrow a_1 (q^n - 1) \rightarrow s_n = \frac{a_1 (q^n - 1)}{q - 1}$$