

A

۱۹,۷۵

$$\frac{a_{14}}{a_{12}} = \frac{a_1 q^{14}}{a_1 q^{12}} = q^2 = 2 = 14 \checkmark$$

$$a_1 = \frac{1}{2} \times 2^9 = 256 \checkmark$$

$$\frac{1}{2} \times 2^{n-1} = 128$$

$$2^{n-1} = 256$$

$$n = 9 \checkmark$$

$$a_4 = \frac{1}{2} \times 2^7 = 64 \quad a_5 = 256 \checkmark$$

$$4, 8, 16, 32, 64, 128, 256$$

$$\frac{a_8}{a_5} = \frac{a_1 q^8}{a_1 q^5} = q^3 = 8$$

$$q^3 = 8$$

$$q = 2$$

$$a_1 = \frac{2}{5}$$

$$a_{10} = \frac{2}{5} \times 2^9 = 256 \checkmark$$

$$a_1 \times a_5 = a_3^2 = 2^2 = 4 \checkmark$$

$$(-)$$

$$a_5 = 256 \quad a_3 = 64 \checkmark$$

$$b^2 = ac \quad (4\sqrt{2})^2 = 2^b \times 2^a \rightarrow 14 \times 2 = 2^{a+b} \rightarrow a+b=5$$

$$\rightarrow \frac{a+b}{2} = \frac{5}{2} \checkmark$$

$$x^2 = (x+1)(1-x) \quad x^2 = x - x^2 + 1 - x = 1 - x^2 \rightarrow 2x^2 = 1 \rightarrow x = \pm \sqrt{\frac{1}{2}}$$

$$\rightarrow \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \pm \frac{\sqrt{2}}{2}$$

به غرض

۹۴۰

$$a_1 + a_1 r^2 = 18 \rightarrow a_1(1+r^2) = 18 \rightarrow \frac{a_1(1+r^2)}{a_1(r+r^3)} = \frac{18}{18 \times 12} \rightarrow r + r^3 = 12r + 12r^3$$

$$\frac{a_1 + a_1 r^2}{a_1 r + a_1 r^3} = 12 \rightarrow a_1(r+r^3) = 12$$

$$\rightarrow 12r^3 - 12r^2 - 12r + 12 = 0 \xrightarrow{12} (r-2)(ar^2+br+c) = 0 \rightarrow ar^2+br+c-rar^2-rbr-r^2c = 0$$

$$a=2, b=2, c=-1 \rightarrow (r-2)(2r^2+2r-1) = 0 \rightarrow r = \frac{-2 \pm \sqrt{4+12}}{4} = \frac{-2 \pm 4}{4} \begin{cases} -1 \\ \frac{1}{2} \end{cases}$$

$$\rightarrow 1+12=18 \rightarrow a_n = 1, 2, 9, 18 \checkmark$$

$$\frac{a}{r} \times a \times ar = 12$$

$$a^2 = 12$$

$$a = 2$$

$$\rightarrow 1, 2, 9, \dots \checkmark$$

$$\rightarrow 1+2+9=12 \checkmark$$

$$\rightarrow \text{تجسین اگر قدر نسبتا باشد} \rightarrow r = 2$$

$$\checkmark 1, 2, 1, \dots \text{دایم} \rightarrow r = \frac{1}{2}$$

$$\frac{1}{9+2+1=12} \checkmark$$

$$1) a \left(\frac{q^n - 1}{q - 1} \right) = r \left(\frac{r^n - 1}{r - 1} \right) = 29.48 \checkmark$$

$$\rightarrow \sqrt{(a_1 - a_n)^n} = (2 \times 2 \times 2^9)^{\frac{1}{2}} = \left(\frac{2^2 \times 2^9}{r^2} \right)^{\frac{1}{2}} = 2^{\frac{11}{2}} \times r^{\frac{7}{2}} \checkmark$$

$$a_1, ar, ar^2, ar^3, \dots$$

$$\xrightarrow{ar} \xrightarrow{ar} \xrightarrow{ar}$$

$$(a_1 - \frac{ar}{ar}), (\frac{ar}{ar} - \frac{ar^2}{ar^2}), (\frac{ar^2}{ar^2} - \frac{ar^3}{ar^3}), \dots$$

$$a(1-r), ar(1-r), ar^2(1-r), \dots \checkmark$$

$$\xrightarrow{ar} \xrightarrow{ar}$$

$$r = q \checkmark$$

$$1) S_n = \frac{n}{r} (a+c) = \frac{n}{r} (1a + (n-1)d)$$

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

$$na + (d+rd+rd+\dots + (n-1)d) =$$

$$na + (1+r+\dots + (n-1))d =$$

$$= \frac{r}{1} na + \frac{(n-1)n}{r} d = \frac{n}{r} (1a + (n-1)d) \checkmark$$

$$\rightarrow S = a + aq + aq^2 + \dots + aq^{n-1}$$

$$qS = aq + aq^2 + \dots + aq^{n-1} + aq^n$$

$$S - qS = a - aq^n$$

$$S(1-q) = a(1-q^n)$$

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