

$$الف) 5q^{x-1} = \frac{1}{2} \times 2^9 = 256$$

$$ب) \frac{a_{17}}{a_{13}} = q^4 = 2^4 = 16$$

$$ج) a_8 \times a_{10} = a_{x^2} \Rightarrow aq^7 \times aq^9 \Rightarrow \sqrt{a^2 q^{16}} = aq^4 = a_7$$

$$د) 128 = aq^{x-1} \Rightarrow \frac{1}{2} \times 2^{x-1} = 128 \Rightarrow x = 9$$

$$\frac{a_1}{a_5} = q^4 = 8 \Rightarrow q = 2$$

$$a \times 2^8 = 12 \Rightarrow a = \frac{12}{256} = \frac{3}{64}$$

$$\frac{3}{64} \times 2^9 = 27$$

$$الف) a_3^5 = 256 \Rightarrow a_3 = 4$$

$$ب) a_1 \times a_5 = a_3^2 \Rightarrow a_1 \times a_5 = 16$$

$$r^a \times r^b = (\sqrt{2})^2 = 2^a \times 2^b = 2^2$$

$$r^a \times r^b = r^{\Delta} \Rightarrow a+b = \Delta$$

$$\Rightarrow \frac{a+b}{2} = \frac{\Delta}{2} = 1, 2$$

$$x^y = (x+1)(1-x) \Rightarrow x^y = x - x^y + 1 - x$$

$$\Rightarrow 2x^y = 1 \Rightarrow x^y = \frac{1}{2} \Rightarrow x = \sqrt{\frac{1}{2}}$$

Δ

$$a_1 + a_1 q^3 = 28$$

$$a q + a q^2 = 12$$

$$\frac{a(1+q^3)}{a(q+q^2)} = \frac{28}{12}$$

$$\frac{1+q^3}{q+q^2} = \frac{28}{12} \Rightarrow q = \frac{1}{2}, a = 28$$

$$\begin{cases} 1, 2, 4, 8 \\ 28, 14, 7, 1 \end{cases}$$

γ

$$a_1 + a_2 + a_3 = 12$$

$$a_1 \times a_2 \times a_3 = 27$$

$$\Rightarrow a_1^3 = 27 \Rightarrow a_1 = 3$$

$$\Rightarrow a_1 + a_3 = 10$$

$$\Rightarrow a_1 = 1, a_3 = 9 \Rightarrow 1, 3, 9$$

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$$\text{الف) } 2 \left(\frac{r^2-1}{r-1} \right) = r^2-1$$

$$\text{ب) } (a_1 \times a_{10})^4 \Rightarrow (a_1 \times a_1 \times q^9)^4 \Rightarrow (8 \times 3^9)^4$$

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$$a, aq, aq^2 \Rightarrow aq - a = a(q-1) \xrightarrow{\times q} aq^2 - aq = aq(q-1)$$

مقدار است 9

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$$\left(\frac{n}{2} (2a + (n-1)d) \right) = \frac{n}{2} (a + a + (n-1)d) = \frac{n}{2} (a_1 + a_n) \Rightarrow S_n = \underbrace{(a_1 + a_n) + (a_2 + a_{n-1}) + \dots}_{\frac{n}{2}}$$

$$S_n = \frac{n}{2} (a_1 + a_n)$$

$$\text{ب) } \Rightarrow a + aq + aq^2 + \dots + aq^{n-1} = a(1 + q + q^2 + \dots + q^{n-1}) \times \frac{q-1}{q-1} \Rightarrow a \left(\frac{q^n-1}{q-1} \right)$$

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