

$$q_{10} = \frac{1}{2} \times 2^9 = 256$$

(الف) 256

$$\frac{a_{14}}{a_{13}} = \frac{\frac{1}{16} \times 2^4}{\frac{1}{16} \times 2^3} = 14 \times 2^4$$

(ب) 16

$$\left. \begin{array}{l} a_6 = 8 \\ a_{10} = 256 \end{array} \right\} \Rightarrow b^2 = 2^{10} \Rightarrow b = 2^5 = 32$$

(2) 32

$$128 = \frac{1}{2} \times 2^n \Rightarrow n = 8$$

(د) هشتمین

$$\frac{a_1}{a_0} = r^3 = \frac{94}{12} \Rightarrow r = 2 \Rightarrow a_{10} = 94 \times 2^4 = 1424$$

(2) 1424

$$\begin{array}{l} a_3 \times a_7 = a_5 \Rightarrow 2^{12} \Rightarrow a_5 = 2^3 \\ a_1 \times a_9 = a_5 \Rightarrow 9 \end{array}$$

(3) (الف) 3

(ب) 9

$$22 = 2^{a+b} \Rightarrow a+b = 5 \Rightarrow \frac{a+b}{2} = 2.5$$

(2)

$$x^2 = 1 - n^2 \Rightarrow 2n^2 - 1 = 0$$

(5)

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

$$\frac{a(1+q^r)}{1+q^r} = \frac{3}{2} \Rightarrow \sqrt{r} = 3 - 3r + 3r^2 \Rightarrow r = \frac{1}{3}$$

(6) 27

$$a(1+27) = 28 \Rightarrow a = 1, 1, 3, 9, 27$$

$$a(1+\frac{1}{27}) = 28 \Rightarrow a = 27, 9, 3, 1$$

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$$a, aq, aq^2, \dots$$

$$a, r^3 = 27$$

$$9, 27, 19 (\checkmark)$$

$$s, a, r = 3$$

$$\frac{a}{q} + r + r^2 a + r + r^2 a + r^2 a^2 = 13a$$

$$\therefore r(1 + q + q^2) = 13a$$

$$\therefore 1 + q + q^2 = \frac{13}{r} a$$

$$\therefore q^2 - \frac{13}{r} a + 1 = 0$$

$$\frac{10 \pm \sqrt{100 - 4 \times \frac{13}{r} a}}{2} \rightarrow \frac{19}{2} \rightarrow \frac{9}{19} + \frac{10}{19} + \frac{5}{19} \checkmark$$

$$\frac{1}{2} \rightarrow 9 + 2 + 1 \checkmark$$

$$\frac{r(r^{10} - 1)}{r} = r^{10} - 1$$

$$r^{10} - 1 \text{ (الف) } (\checkmark)$$

$$(2 \times 2 \times 3^9)^d = 2^{10} \times 3^{9d}$$

$$1024 \times 3^{9d} \text{ (ب) } (\checkmark)$$

$$a, aq, aq^2, \dots$$

$$9 \text{ قدریت } q \text{ (ج) } (\checkmark)$$

$\Downarrow$

$$aq - a, aq^2 - aq, \dots \rightarrow a(q-1), aq(q-1), aq^2(q-1)$$

$$\underbrace{(-1) \times q}_{(-1) \times q} \underbrace{(-1) \times q}_{(-1) \times q}$$

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

$$(10)$$

$$S_n [a_1 + (n-1)d] + [a_1 + (n-2)d] + \dots + a$$

$$\therefore 2S_n = [a_1 + a_1 + (n-1)d] + [a_1 + d + a_1 + (n-2)d] + \dots$$

$$2a_1 + (n-1)d \quad 2a_1 + (n-1)d \quad \therefore n \text{ تکرار می شود}$$

$$\therefore 2S_n = n[2a_1 + (n-1)d] \therefore S_n = \frac{n}{2} (2a_1 + (n-1)d)$$



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

$$qS_n = q(a + aq + aq^2 + \dots + aq^{n-1}) = (aq + aq^2 + \dots + aq^n)$$

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