

$$a_n = \frac{1}{r} \times r^{(n-1)}$$

$$128 = \frac{1}{r} \times r^{n-1} \Rightarrow n = 9 \quad \text{دقت!}$$

$$\frac{1}{r} \times r^9 = r^8 = 256 \quad \text{الف}$$

$$\left(\frac{1}{r} \times r^4 \right) = 16 \quad \text{ب}$$

$$\sqrt{\left(\frac{1}{r} \times r^3 \right) \times \left(\frac{1}{r} \times r^9 \right)} = r^6 = 32 \quad \text{ج}$$

(۱, ۷, ۵)

$$r^3 = \frac{q^4}{r^4} = 8 \Rightarrow q = r$$

$$12 = a_1 \times r \Rightarrow a_1 = \frac{12}{r} \quad a_{10} = \frac{12}{r} \times r^9 = 384 \quad \text{دقت!}$$

(۲)

$$\frac{a_3}{a_2} \times \frac{a_3}{a_1} \times \frac{a_3}{a_1} \times \frac{a_3}{a_1} \times \frac{a_3}{a_1} = 2^6 \times 3 \quad a_3 = 3 \quad \text{الف}$$

$$\Rightarrow a^5 = 2^6 \times 3$$

$$\Rightarrow a_3 = 3$$

$$\frac{a_3}{a_2} \times a_2 \times a_2 = a_3^2 = 3^2 = 9 \quad \text{ب}$$

(۳)

$$r\sqrt{r} = \sqrt{32} = r^{\left(\frac{5}{2}\right)}$$

$$\Rightarrow r^{\frac{5}{2}} = r^{\left(\frac{5}{2}\right)} \quad \text{ب}$$

$$r^{\frac{5}{2}} = \frac{5}{2} \quad \text{واحد حسابی بر یک است با}$$

$$r^a \times r^b = r^{(a+b)} = r^{\left(\frac{5}{2}\right)} \Rightarrow a+b = \frac{5}{2}$$

(۴)

$$n^2 = 1 - m^2$$

$$m^2 = 1$$

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

$$\frac{\sqrt{r}}{r}, \frac{+\sqrt{r}}{r} \quad \text{دقت!}$$

(۵, ۷, ۵)

۵

$a_1 + a_1 q^r = a_1 (1 + q^r) = 11$ $a_1 q + a_1 q^r = a_1 (q + q^r) = 12$ $\frac{a_1 (1 + q^r)}{a_1 (q + q^r)} = \frac{11}{12} \Rightarrow 12 + 12q^r = 11q + 11q^r$ $12q^r - 11q - 11q^r + 12 = 0 \Rightarrow q = 3$	۲ ۶
$\frac{a_1}{q} \times a_1 \times a_1 q = 12 \Rightarrow a_1 = 3$ $\frac{3}{q} + 3 + 3q = 12$ $\Rightarrow \frac{3 + 3q^2}{q} = 1 \Rightarrow 1 \cdot q = 3 + 3q^2$ $\Rightarrow 3q^2 - 1 \cdot q + 3 = 0 \Rightarrow q = 3$	۱، ۳، ۱ ۷
$\frac{r \times (r^1 - 1)}{(r - 1)} = 29 \cdot 11$ $r \times r^2 \times r \times r^1 \times r \times r^2 \dots \times r \times r^9 = r^{10} \times r^{45}$	الف ۲ ۸
$a_1, a_1 q, a_1 q^2, a_1 q^3$ مرحله در q ضرب می شود و جمله اول $a_1 (q-1)$ است. $a_1 q - a_1, a_1 q^2 - a_1 q, a_1 q^3 - a_1 q^2 \Rightarrow a_1 (q-1), a_1 q (q-1), \dots$	۲ ۹
$a_1, a_1 + d, a_1 + 2d, \dots, a_1 + (n-1)d, a_1 + (n-1)d$ مجموعه $\{a_1, a_1 + d, a_1 + 2d, \dots, a_1 + (n-1)d\}$ و $\{a_1 + (n-1)d, a_1 + (n-2)d, \dots, a_1 + d, a_1\}$ مجموعه $\{a_1, a_1 + d, a_1 + 2d, \dots, a_1 + (n-1)d\}$ و $\{a_1 + (n-1)d, a_1 + (n-2)d, \dots, a_1 + d, a_1\}$ $S = \frac{n}{2} (2a_1 + (n-1)d)$	۲ ۱۰

$$a_1 q^0 + a_1 q^1 + a_1 q^2 + \dots + a_1 q^{(n-1)}$$

∴

$$= a_1 (q^0 + q^1 + \dots + q^{(n-1)}) \text{ (I)}$$

$$\text{Sum}(q_s) = q^0 + q^1 + \dots + q^{(n-1)}$$

$$q \times \text{Sum}(q_s) = q^1 + q^2 + \dots + q^n$$

$$q \times \text{Sum}(q_s) - \text{Sum}(q_s) = q^n - q^0$$

$$= \text{Sum}(q_s) \times (q - 1)$$

$$\Rightarrow \text{Sum}(q_s) = \frac{q^n - q^0}{q - 1} \text{ (II)}$$

$$\text{(II), (I)} \Rightarrow \text{Sum} = \frac{a_1 \times (q^n - 1)}{(q - 1)} \checkmark$$