

آیا شعری - کرده دهم فصل - تلف سوار ۱۴

→ $a_n, a_2^{n-1} \rightarrow \frac{r^{-1}}{r} \times r^{n-1} = r^{n-2}, a_n \Rightarrow a_1, r^n, 259$ (الف - ۱)

$\frac{a_{14}}{a_{13}} = \frac{2^4}{2^3} = 2, 14$ (ب)

$2^{n+1} = \frac{b}{a} \rightarrow 2^r = \frac{a_{14}}{a_8} = \frac{2^9}{2^9} \rightarrow 2 = 2^r, 1 \rightarrow 4, 32, 254$ (ج)

$128, 2^9 = 2^{n-2} \rightarrow n-2=9 \rightarrow n=11$ (د)

$a_5=12, a_8=94 \rightarrow \frac{a_n}{a_5} = 2^r, \frac{94}{12}, 1=2^r \rightarrow 2, 2 \rightarrow a_1, a_n \times 2^r = 94 \times 4, 376$ (۲)

$a_1 \times a_2 \times a_3 \times a_4 \times a_5, a^5 \cdot d^{10}, (ad^2)^5, 243, 3 \rightarrow ad^2, a_5=3$ (۳- الف)

$a_1 \times a_5, a^5 \cdot d^4, (ad^2)^5, 3^5=9$ (ب)

→ $(\sqrt[4]{2})^r = 2^a \times 2^b \rightarrow 32, 2 = 2^{a+b} \Rightarrow a+b=5 \Rightarrow a=1, b=3 \rightarrow 2, \sqrt{2}$ (۴- الف)

→ $\frac{2+3}{2} = \frac{a+b}{f+1}$

$\frac{a_{11}}{a_5} = \frac{a_7}{a_3} = 2^x \Rightarrow (a_7)^2 = a_{11} \cdot a_3$ (۵- جمله هفتم، واسطه هفتمی بین جمله سوم و یازدهم است)

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

$a+a_2^r, 21 \rightarrow a(1+2^r) = a(1+2)(1-2+2^r) = 21 \rightarrow \frac{a_1+a_8}{a_2+a_7} = \frac{a(1+2)(1-2+2^r)}{2^r(1+2)}, \frac{21}{12} = \frac{1}{2} \rightarrow 3-2+2^r=1 \rightarrow 2^r=0$

→ $3-2+2^r=1 \rightarrow 2^r=0 \rightarrow \Delta = b^2-4ac, 100-4(9), 48 \rightarrow 2 = \frac{-b \pm \sqrt{\Delta}}{2a} = \frac{10 \pm \sqrt{48}}{2(3)} = \frac{10 \pm 4\sqrt{3}}{6}$

→ $2_1 = \frac{10+4\sqrt{3}}{6} = 2, 2_2 = \frac{10-4\sqrt{3}}{6} = \frac{1}{2}$ (۶- الف)

$\frac{a}{2} \times a \times a_2 = 21 \rightarrow a^2=21 \rightarrow a=3, \frac{3}{2} + 3 \times \frac{3}{2} = 13 \rightarrow \frac{3}{2} + 3 \times \frac{3}{2} = 13 \rightarrow 3 + 3 \times 3 = 13 \rightarrow 3, 3, 3$

→ $2 = 3 \rightarrow \frac{3}{3}, 3, 3 \times 3 \rightarrow 1, 3, 9$

→ $2 = \frac{1}{3} \rightarrow \frac{3}{3}, 3, 3 \times \frac{1}{3} \rightarrow 9, 3, 1$

$$S_n = a \left(\frac{q^n - 1}{q - 1} \right) \Rightarrow S_{10} = 2 \left(\frac{2^{10} - 1}{2 - 1} \right) = 2^{10} - 1 = 1023$$

الف - 1

$$a_0 = 11 \times 9 = 99 \rightarrow P_n = (11 \times 9)^n \rightarrow P_{10} = (11 \times 9)^{10}$$

ب -

$$a_n \rightarrow a, aq, aq^2, \dots, aq^{n-1}$$

$$b_n \rightarrow a(q-1), aq(q-1), aq^2(q-1), \dots, aq^{n-1}(q-1)$$

$$\Rightarrow \frac{b_n}{b_1} = \frac{aq^n(q-1)}{a(q-1)} = q^n, \frac{b_r}{b_r} = \frac{aq^r(q-1)}{aq^r(q-1)} = 1 \Rightarrow \frac{b_n}{b_{n-1}} = \frac{aq^n(q-1)}{aq^{n-1}(q-1)} = q$$

$$\text{مجموع جملات} \times \frac{(a_1 + a_n)}{2}$$

الف - 1. الف به طور کلی فرمول جمع جملات این است:

$$S = \frac{n(a_1 + a_n)}{2} = \frac{n}{2}(a + a_n), a_n = a + (n-1)d \Rightarrow S = \frac{n}{2}(a + a + (n-1)d) = \frac{n}{2}(2a + (n-1)d)$$

$$S_n = a + aq + aq^2 + \dots + aq^{n-1} \xrightarrow{\times q} qS_n = aq + aq^2 + aq^3 + \dots + aq^n$$

$$\Rightarrow qS_n - S_n = (aq + aq^2 + aq^3 + \dots + aq^n) - (a + aq + aq^2 + \dots + aq^{n-1}) = aq^n - a = a(q^n - 1)$$

$$\Rightarrow S_n(q-1) = a(q^n - 1) \rightarrow S_n = a \left(\frac{q^n - 1}{q - 1} \right)$$

ج -