

$$a + aq + aq^2 = 11 \xrightarrow{\div a} 1 + q + q^2 = 11 \Rightarrow q^2 + q + 1 = 11 \Rightarrow q^2 + q - 10 = 0$$

$$a \times aq \times aq^2 = 44 \xrightarrow{\div a^3} q^3 = 4 \Rightarrow aq = 4 \Rightarrow a = \frac{4}{q} \quad (I)$$

روش دیگری ↓ ضرب کنیم

$$q^2 - 10q + 14$$

سوال ۱

$$(q-1) \Rightarrow q = \frac{1}{4}$$

$$(q-14) \Rightarrow q = 14$$

$$S_5 = a + aq + aq^2 + aq^3 + aq^4 \Rightarrow a(1 + q + q^2 + q^3 + q^4) = \frac{121 \times 14}{1} \Rightarrow 121$$

سوال ۳

$$x^2 = (x^2 - 2)(x^2 + 2) \Rightarrow x^2 = x^2 + 2x^2 - 4 \Rightarrow 0 = x^2 - 2x^2 - 4 \quad x^2 = t$$

سوال ۲

$$-t^2 - 2t - 4 \Rightarrow (t-2)(t+2) \xrightarrow{t=x^2} x^2 = 2 \quad x = \sqrt{2} \quad x = -\sqrt{2}$$

$$1, 2, 4, \dots$$

$$a \cdot \left(\frac{q^n - 1}{q - 1} \right) \Rightarrow \frac{14 \times 14}{1 - \frac{1}{4}} = \frac{14 \times 14}{\frac{3}{4}} = \frac{14 \times 14 \times 4}{3}$$

$$\begin{matrix} 2 & 4 & 8 \\ -\frac{1}{14} & -\frac{1}{4} & -\frac{1}{8} \end{matrix}$$

$$\frac{44 - 1}{d + 1} = 4 \Rightarrow d \xrightarrow{\text{جواب}} 1 + (4-1)4 = 17$$

سوال ۲

$$\frac{1}{1} = r^4 \Rightarrow r = 2 \xrightarrow{\text{بهره‌برداری}} aq^3 = 14 \xrightarrow{\text{جواب}} 17 + 14 = 31$$

$$\frac{-40}{4} + \frac{44}{4} = \frac{1}{4} = d$$

سوال ۵

$$t_{1,1} = 1 \cdot d + a = 40 - 44 = 13$$

$$aq^4 = 1 \Rightarrow 14 \times q^4 = 1 \Rightarrow q = \frac{1}{14}$$

$$t_r, t_v, t_a$$

$$(a + rd)(a + rd) = (a + rd)^2 \Rightarrow a^2 + 1 \cdot ad + rd^2 = a^2 + 2rd + rd^2 \Rightarrow -2ad = 2 \cdot d^2 \Rightarrow$$

سوال ۶

$$0 = 2 \cdot d^2 + 2ad \Rightarrow 0 = d(2 \cdot d + 2a) \xrightarrow{d=0} 2 \cdot d = -2a \Rightarrow d = -\frac{1}{2}a$$

$$\text{if } (d=0) \Rightarrow a, a, a \Rightarrow d=0$$

$$\text{if } (d = -\frac{1}{2}a) \Rightarrow \frac{1}{10}a, \frac{1}{10}a, \frac{1}{10}a \Rightarrow d = -\frac{1}{2}a$$

$$\begin{matrix} t_r & t_v & t_a \\ \swarrow & \searrow & \\ r_d & r_d & \end{matrix}$$

t_r, t_f, t_n
 $(t_f)^r = t_r \times t_n \Rightarrow (a+rd)^r = (a+d)(o+vd) \Rightarrow a^r + rad + rd^r = a^r + rad + vd^r$
 $rad = rd^r \Rightarrow d^r + ad = 0 \Rightarrow d(a+d) = 0 \Rightarrow \underbrace{d \neq 0}_{\text{متمايزاند}} \Rightarrow \underbrace{a = -d}$

سوال ۷

$a+d = \frac{1}{r} \rightarrow rd = \frac{1}{r} \Rightarrow d = \frac{1}{r^2} / a = \frac{1}{r} \Rightarrow \text{تساوی ها می باشد}$

t_r, t_f, t_n

$1, 2, 3 \Rightarrow q=2$

$t_n = aq^q = \frac{1}{r^2} \times 2^q = 128$

$3t_r, 2t_f, t_n$

$r(aq^r) = 3aq + aq^3 \Rightarrow r^2aq^r = aq(r^3 + q^3) \Rightarrow r^2q = r^3 + q^3 \Rightarrow q^3 - r^2q + r^3 = 0$
 $\rightarrow (q-1) \rightarrow q=1$
 $\rightarrow (q-r) \rightarrow q=r$

سوال ۸

$\frac{1}{r}, \frac{1}{r^2}, \dots$

t_r, t_f, t_n
 $\frac{1}{r}, \frac{1}{r^2}, \frac{1}{r^3}$

سوال ۹

$t_n = -\frac{1}{r}n + \frac{4}{r}$

$(x + \frac{d}{r})(x-1) = (x + \frac{1}{r})^r \Rightarrow x^r + \frac{1}{r}x - \frac{d}{r} = x^r + \frac{1}{r}x + \frac{1}{r^2} \Rightarrow -\frac{21}{14} = \frac{1}{r}x \Rightarrow x = -\frac{21}{r}$

$\frac{\frac{1}{r} - \frac{21}{r}}{\frac{d}{r} - \frac{1}{r}} = \frac{-\frac{20}{r}}{-\frac{14}{r}} = \frac{5}{7}$

$\frac{a}{1} + \frac{aq^r}{r} + \frac{aq^4}{1} = vr^3 \Rightarrow a(1+q^r+q^4) = vr^3 \Rightarrow a=1$

سوال ۱۰

$\frac{aq^4 - aq^r}{1} = aq^r \cdot a^2 \Rightarrow \frac{aq^r(q^4-1)}{1} = a(q^r-1) \Rightarrow \frac{q^4}{2} = 1 \Rightarrow q=2$

$d = \frac{4f-1}{1} = v \quad \frac{1}{2} \quad 1-1 = v$