

مسألة اول

$$a_1 = 5, \quad ar = 41 \rightarrow \frac{a_1}{a} + rd \rightarrow rd = r_1 \rightarrow d = v$$

$$\begin{aligned} t_n &= 5 + v(n-1) \\ r_1 n &= 5 + v(n-1) \\ 141 &= 5n - v \\ 170 &= 5n \rightarrow n = 34 \end{aligned}$$

$$11, 1, 1, 1, \dots \rightarrow 99V \rightarrow n = \frac{99V - 1 \cdot 1}{1} + 1 = 1296$$

مسألة دوم

$$a_{n+1} + a_{n+r} + a_{n+r} = -4n + 12$$

$$a_{n+d} + a_{n+d} + a_{n+d} = -4n + 12 \rightarrow 3a_n + 4d = -4n + 12$$

$$d = 5$$

$$t_n = -2 + r(n-1)$$

$$a_{14} = -2 + r(14) \quad \left. \begin{array}{l} r_1 = -4 \\ a_1 = -2 \end{array} \right\} \xrightarrow{n=1} r_{14} = -4n$$

$$d_1 = 4$$

$$a_n = -2 + r(n) = 12 \rightarrow -2 + r = 12 \rightarrow r = 14$$

مسألة سوم

$$\frac{r_b}{a_n} = \frac{a_r}{a_r} \rightarrow r(r^{n-1}) = r^n - 1 + r^n - r^n$$

$$\begin{aligned} r^{n+2} &= r^n(1+r^2) - r \rightarrow r^n = 4 \\ r^{n+2} &= r^n(1+r^2) - r \rightarrow r^n = 4 \end{aligned}$$

$$a_{11} - a_1 = 10 \rightarrow a + 10d - a - 0d = 10 \rightarrow d = 1$$

$$a_{11} + a_1 = 20 \rightarrow a + 10d + a = 20 \rightarrow 2a + 10d = 20$$

$$t_{11} = -15 + r(11) = 15 \rightarrow r = 3$$

$$a = -15/10$$

$$\left. \begin{array}{l} a_r = \frac{r^n - 1}{r - 1} \\ d_1 = r^{n+1} \\ a_{14} = r^{14} - r \end{array} \right\} \rightarrow V_0 - 5 = 44$$

$$t_n = t_{n-1} + 10$$

$$\begin{aligned} t_{11} &= t_{10} + 10 \rightarrow t_{11} = t_1 + 10 \\ t_n &= t_{n-1} + 10 \rightarrow t_n = t_1 + 10(n-1) \end{aligned}$$

$$(t_1 + t_n)(t_1 - t_n) \rightarrow t_1^2 - t_n^2 = (a + 10d - a - 10d)$$

$$t_v = a + 9d \rightarrow a + 9r$$

$$\frac{t_1^2 - t_v^2}{t_v} = \frac{r(a + 9r)}{a + 9r} = r$$

مسألة رابعه

$$a_1 + a_2 + a_3 + a_4 + a_5 = \frac{1}{r}(a_1 + a_2 + a_3 + a_4 + a_5)$$

$$a + a + d + a + d + a + d + a + d = \frac{1}{r}(a + d + a + d + a + d + a + d)$$

$$5(a + 1 \cdot d) = \frac{1}{r}(5a + 4d)$$

$$5(a + d) = \frac{5}{r}(a + d)$$

$$a + rd = \frac{1}{r}a + \frac{v}{r}d \rightarrow \frac{1}{r}a = \frac{1}{r}d$$

$$\frac{a_r}{a_1} = \frac{a + d}{a} = \frac{a + a}{r} = r \rightarrow r = 1$$

$$d = \frac{b-a}{n+1} \rightarrow \frac{r+\sqrt{r}-r+\sqrt{r}}{1r+1} \rightarrow \frac{r\sqrt{r}}{1r} = \sqrt{r} \quad (\text{سوال ۳})$$

$$d = \frac{rr-r}{rn-r+1} = \frac{r}{rn-r} = \frac{1}{n-1} = d$$

(سوال ۴)

$$t_{n+1} = t_1 + nd \rightarrow 11 \pm r + nd \rightarrow nd \rightarrow q \rightarrow q = n \left(\frac{1}{n-1} \right)$$

$$r = n \left(\frac{1}{n-1} \right) \rightarrow \omega n = q_{n-r} \rightarrow n = r$$

سوال ۵

$$a_n + a_{n+r} = a_r + a_{14}$$

$$n + n + r = r + 14$$

$$rn = 14 \rightarrow \boxed{n=1} \quad a_n + a_{1r} = a_r + a_{14}$$

$$a_n = r a_{\frac{n}{r}} \rightarrow a_1 = r a_r$$

$$a + rd = ra + qd \rightarrow ra = -rd$$

$$\boxed{a = -d}$$

$$a_n = a + d(n-1) = 0 \rightarrow -d + dn - d = 0$$

$$dn = 2d$$

$$\rightarrow \boxed{n=2}$$