

(سوال ۱)

$t_n = r_{n+1}$ (الف)

(مسئله ۲)

$$t_n = 4, 10, 16, 12 \Rightarrow t_n = F_n + 1 \rightarrow t_{10} = \underline{F_{11}}$$

(ب) ۴ جہ حصہ $10 \times 8 = 80$ یعنی ۸۰ جہ ۳۲ سیاہ ۲۹۹

$$a_{r_0} - a_{r_1} = \cancel{a + r_1 d} - \cancel{a - r_1 d} = \underline{r_d} \quad \Rightarrow \quad r(1 - \sqrt{p}) = \underline{r - r\sqrt{p}}$$

(مسؤال ۵)

(مسؤال ٤) $a_n = 3, 5, 7, \dots \rightarrow a_n = 2n + 1 \rightarrow a_{10} = 21$

بله وجود دارد

مثال ۵: $C_n = \{1, 2, \dots, n\} \rightarrow 1 \in C_1 \rightarrow 1 \in C_2 \rightarrow \dots \rightarrow n \in C_n$

(سؤال ٧) $a_1 + a_r + a_r = 21$

$$\frac{a_r - a_r + a_1}{a_1}$$

$$a_1 + a_r + a_r = 105$$

$$3a + 2d = 105 \rightarrow a + d = 35$$

$$3a + 3d = 21 \rightarrow a + d = 7$$

$$\begin{aligned} a + d &= 7 \\ a + 2d &= 35 \end{aligned} \rightarrow \begin{aligned} -a - 2d &= -14 \\ a + 2d &= 35 \end{aligned}$$

$$-d = -21 \rightarrow a = 21$$

$$\Rightarrow \frac{a_r - a_r + a_1}{a_1} = \frac{a_1 + 2d - a - d + a}{-21} = \frac{d + a}{-21} = \frac{7}{-21} = -\frac{1}{3}$$

(سؤال ٨) $a_1 + a_r + a_r = 15 \rightarrow 3a + 2d = 15 \rightarrow a + d = 5$

$$a_r + a_r = 25 \rightarrow 2a + 2d = 25$$

$$\Rightarrow \begin{cases} a + d = 5 \\ 2a + 2d = 25 \end{cases} \rightarrow \begin{aligned} -2a - 2d &= -10 \\ 2a + 2d &= 25 \end{aligned}$$

$$a + 9d = 8 \rightarrow 2 + 27 = 29$$

$$\begin{aligned} ad = 15 &\rightarrow d = 3 \\ a &= 2 \end{aligned}$$

(سؤال ٩) $S_9 = 9S_3 \rightarrow \frac{9}{1}(2a + (9-1)d) = 9 \times \frac{3}{1}(2a + 2d) \rightarrow 9a + 42d = 24a + 24d$

$$\frac{a_r}{a_v} = \frac{a + 19d}{a + 2d} \rightarrow$$

$$\frac{5d + 19d}{5d + 12d} = \frac{42d}{14d} = \left(\frac{42}{14}\right)$$

$$\begin{aligned} a + 19d &= 24a + 24d \\ -23a &= -5d \rightarrow 23a = 5d \\ a &= \frac{5}{23}d \end{aligned}$$

(سؤال ١٠) $a_1 = 11$, $a_v = 35 \rightarrow a + 4d = 35 \rightarrow 11 + 4d = 35 \rightarrow d = 6 \Rightarrow a_n = 11n + 5$

$$a_r = 14 + 5 = 19$$

$$b_n = 38 + (n-1)d = 23 \rightarrow 38 + 6d = 23 \rightarrow 6d = -15 \rightarrow d = -\frac{5}{2} \rightarrow b_n = -\frac{5}{2}n + 43$$

حساب n : $d = \frac{b - a}{n+1} \rightarrow -\frac{5}{2} = \frac{38 - 19}{n+1} \rightarrow -\frac{5}{2}(n+1) = 19 \rightarrow -\frac{5}{2}n - \frac{5}{2} = 19 \rightarrow -\frac{5}{2}n = \frac{43}{2} \rightarrow n = -\frac{43}{5}$