

$$a_1 = 5 + (1-1)d = 5 - (4 \times 6) = 5 - 24 = -19$$

(ب) $l_1 = 5$

$d = 6$

$l_1 + (n-1)d \Rightarrow 5 + (n-1)6$

(الف)

(2)

(ب) $9, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, \dots$

$\frac{9}{19}, \frac{22}{19}, \frac{31}{19}, \dots \Rightarrow 9 + (n-1) \times 19$

$9 + (1-1) \times 19 = 9 \Rightarrow 9, 28, 47, 66, \dots$

$9 + 28 + 47 + 66 = 150$

(الف) $S_n = \frac{n}{2} (a_1 + a_n)$

$a_{10} = 9 + (10-1) \times 19 = 171$

$a_1 = 9$

$S_n = \frac{10}{2} (9 + 171) = 910$

(الف)

(2)

$d = 2 - (1 + \sqrt{3}) = 1 - \sqrt{3}$

$l = 1 + \sqrt{3}$

$a_{23} - a_{25} = 1 + \sqrt{3} + (1 - \sqrt{3}) \times 22 - \{1 + \sqrt{3} + (1 - \sqrt{3}) \times 24\} = 1 + \sqrt{3} + 22 - 22\sqrt{3} - 1 - \sqrt{3} - 24 + 24\sqrt{3} = -2 + 2\sqrt{3}$

(2)

$\frac{x+y}{2} = 2 \Rightarrow x+y = 4$

$\frac{\Delta^2 x \Delta^2 y}{2} = 2 \times 2 \Delta^2 \Rightarrow \Delta^2 x + \Delta^2 y = 4 \times \frac{\Delta^2 x}{\Delta^2 x} \Rightarrow \Delta^2 y = \Delta^2 x (4-1) \Rightarrow \Delta^2 y = \Delta^2 x + 1 \Rightarrow y = 2x + 1$

$2 - x = 2x + 1 \Rightarrow 3x = 1 \Rightarrow x = \frac{1}{3} \Rightarrow y = \frac{5}{3}$

$xy = 1 \times \frac{5}{3} = \frac{5}{3}$

(2)

$\frac{2x-1}{+2}, \frac{2x-1}{+2x+1}, 4x$

$2x+1 = 3 \Rightarrow x = 1 \Rightarrow -2, 0, 2 \Rightarrow l = -2, d = 2 \Rightarrow a_4 = l + (n-1)d \Rightarrow -2 + (3-1) \times 2 = 2$

(2)

$$a_n \Rightarrow t=2, d=2 \Rightarrow 2+(n-1)2 = 2+19 \times 2 = 40$$

$$b_n \Rightarrow t=2, d=3 \Rightarrow 2+(n-1)3 = 2+19 \times 3 = 59$$

$$c_n = 5, 11, 17, \dots \Rightarrow t=5, d=6 \Rightarrow 5+(n-1)6 \leq 41 \Rightarrow 5+6n-6 \leq 41 \Rightarrow 6n \leq 42 \Rightarrow n \leq 7$$

$$\left. \begin{array}{l} a_n \leq 41 \\ b_n \leq 59 \end{array} \right\} \text{ اشتراک } \Rightarrow c_n \leq 41$$

در صورت های مشترک

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$$\left\{ \begin{array}{l} 3t+2d=21 \Rightarrow t+d=7 \\ 3t+4d=10 \Rightarrow t+d=2 \end{array} \right\} \Rightarrow d=3d-7=21 \Rightarrow t=-11$$

$$a_1 = -11$$

$$a_3 - a_2 + a_1 = t + d = -11 + 11 = 0 \Rightarrow \frac{+7}{-11} = \frac{-1}{3}$$

(-7) (3) (+7)

1, 7, 0

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$$\left\{ \begin{array}{l} t+t+d+t+d=3t+2d=10 \Rightarrow t+d=2 \\ t+2d+t+2d=3t+4d=20 \end{array} \right\} \Rightarrow 2d=10 \Rightarrow d=5 \Rightarrow t=2d-10=0$$

$$t+2d+t+2d=3t+4d=20$$

$$a_{10} = t + 9d = \frac{2}{5} + 9 \times \frac{10}{5} = \frac{2+90}{5} = \frac{92}{5}$$

$$a_1 + a_2 + a_3 = 10 \rightarrow 3a_2 = 10 \rightarrow a_2 = \frac{10}{3}$$

$$a_2 + a_4 = a_2 + a_2 + 2d + 2d = 20 \rightarrow d = 3$$

$$a_1 = a_2 + 1d \rightarrow 29$$

$$S_9 = 4S_3 \rightarrow \frac{9}{2}(a_1 + a_9) = \frac{4 \times 9}{2}(a_1 + a_3) \Rightarrow a_1 + a_9 = 4a_1 + 4a_3 \Rightarrow t+t+1d = 3t+3d \Rightarrow t=d$$

$$\frac{a_{10}}{a_7} = \frac{t+9d}{t+6d} = \frac{t+19d}{t+6d} = \frac{21}{11} \quad \frac{a_{19}}{a_7} = \frac{a_1 + 19d}{a_1 + 6d} = \frac{a_1 + 31a_1}{a_1 + 12a_1} = \frac{32}{13} \times \frac{4}{3}$$

$$t=11 \quad t+9d=3d \quad 9d=2d \Rightarrow d=2 \Rightarrow 11, 13, 15, 17, 19, 21, 23$$

$$t=31 \Rightarrow d=0 \Rightarrow 31, 33, 35, 37 \quad 33 = 31 + 2d \Rightarrow d = 1$$

$$\frac{a_n - a_1}{n-1} = \frac{2d}{n-1} \Rightarrow d=2 \quad \frac{13-31}{n+1} = -2 \rightarrow n+1=9 \rightarrow n=8$$

1, 0

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