

$$t_n = 5, 9, 13, 17, \dots$$

$\begin{matrix} \text{ } & \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } & \text{ } \end{matrix}$
 $\begin{matrix} & +4 & & +4 & & +4 \\ & +4 & & +4 & & +4 \end{matrix}$

$$d = 4 \Rightarrow t_n, t_{n+1} \leftarrow \text{اف}$$

$$t_n = 4(10) + 1 = 41 \quad \text{(ب)}$$

$$t_n = 9, 10, 16, 18, \dots$$

$\begin{matrix} \text{ } & \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } & \text{ } \end{matrix}$
 $\begin{matrix} & +1 & & +6 & & +2 \\ & +1 & & +6 & & +2 \end{matrix}$

$$S_{10} = \frac{10}{2} (12 + 9d) = 120 \leftarrow \text{اف}$$

$\begin{matrix} 12 & 10 & 8 & 6 & 4 & 2 & 0 & -2 & -4 & -6 & -8 & -10 & -12 & -14 & -16 & -18 & -20 & -22 & -24 & -26 & -28 & -30 & -32 & -34 & -36 & -38 & -40 & -42 & -44 & -46 & -48 & -50 & -52 & -54 & -56 & -58 & -60 & -62 & -64 & -66 & -68 & -70 & -72 & -74 & -76 & -78 & -80 & -82 & -84 & -86 & -88 & -90 & -92 & -94 & -96 & -98 & -100 \end{matrix}$

$$t_n, t_{n+1}$$

$$t_{19}, t_{18}, t_{17}, t_{16} \Rightarrow$$

$$t_{19} = 6 \times 19 + 1 = 115 \Rightarrow t_{19} = 115$$

$$S_F = \frac{F}{2} (2a + (F-1)d) = 199 \leftarrow \text{(ب)}$$

$$1 + \sqrt{3}, 2, 3 - \sqrt{3}, \dots \rightarrow d = 1 - \sqrt{3}$$

$\begin{matrix} \text{ } & \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } & \text{ } \end{matrix}$
 $\begin{matrix} & +1-\sqrt{3} & & +1-\sqrt{3} & & +1-\sqrt{3} \\ & +1-\sqrt{3} & & +1-\sqrt{3} & & +1-\sqrt{3} \end{matrix}$

$$t_{19} - t_{17} = (a_1 + 18d) - (a_1 + 16d) = 2d$$

$$d = \frac{t_{19} - t_{17}}{2} = \frac{115 - 113}{2} = 1 \leftarrow \text{اف}$$

$$a_n = a^{2n}, 3 \times 2a^{2n}, a^9 \rightarrow a \times a^{2n} = a^{2n+1} \rightarrow y, n+1$$

$\begin{matrix} \text{ } & \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } & \text{ } \end{matrix}$
 $\begin{matrix} & +2a^{2n} & & +2a^{2n} & & +2a^{2n} \\ & +2a^{2n} & & +2a^{2n} & & +2a^{2n} \end{matrix}$

$$b_n = 2, 4, 6, \dots$$

$\begin{matrix} \text{ } & \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } & \text{ } \end{matrix}$
 $\begin{matrix} & +2 & & +2 & & +2 \\ & +2 & & +2 & & +2 \end{matrix}$

$$2 - (2n-1) = n$$

$$\frac{2n-1}{n-1} \rightarrow y = 2+1=3$$

$$2n-1, 2n-1, 4n, 4n+1 \Rightarrow$$

$\begin{matrix} \text{ } & \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } & \text{ } \\ \text{ } & \text{ } & \text{ } & \text{ } \end{matrix}$
 $\begin{matrix} & +2 & & +2 & & +2 \\ & +2 & & +2 & & +2 \end{matrix}$

$$t_F = 4n+1 = 4 \times 1 + 1 = 5$$

~~$$a_n = r_1 d_1 v_1 \dots$$~~

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$$a_n = r_1 d_1 v_1 \dots \rightarrow a_n = r_{n-1} \rightarrow a_{r_1} = r_1 q$$

$$b_n = r_1 d_1 v_1 \dots \rightarrow b_n = r_{n-1} \rightarrow b_{r_1} = r_1 q$$

$$c_n = r_1 d_1 v_1 \dots \rightarrow c_n = r_{n-1} \rightarrow r_{n-1} = r_1 q$$

$$r_1 = r_1 q$$

$$a_1 + a_r + a_p = r_1 \rightarrow r_1 a + r_1 d = r_1 \Rightarrow r_1 a + r_1 d - r_1 a - r_1 d = r_1 - r_1 a$$

$$a_1 + a_r + a_d = 10d$$

$$r_1 a + r_1 d = 10d$$

$$\frac{a_r - a_r + a_1}{a_1} = \frac{r_1 a + r_1 d - r_1 a - r_1 d + a_1}{a_1} = \frac{-r_1 + r_1 a}{-r_1} = \frac{1}{r_1}$$

$$S_r = 10 = \frac{r_1}{r_1} (a + a_r) = 10 \rightarrow a_1 + a_r + r_1 d = 10$$

$$a_r + a_d = r_1 a$$

$$r_1 a + r_1 d = r_1 a \rightarrow a_1 + r_1 d = r_1 a$$

$$r_1 (a - d) + r_1 d = r_1 a \rightarrow a_1 + r_1 d = r_1 a$$

$$S_q = 9 S_p \Rightarrow \frac{a_r}{a_v} = \frac{a + 19d}{a + 4d} = \frac{a + r_1 a}{a + 19a} = \frac{r_1 q a}{19a} = \frac{r_1}{19}$$

$$S_q = 9 \frac{r_1}{r_1} (a + r_1 d) = 9 \frac{r_1}{r_1} (a + r_1 d)$$

$$9a + r_1 4d = r_1 v a + r_1 v d$$

$$a_r = 11$$

$$a_v = r_1 d, a_1 + 4d \rightarrow a_r = r_1$$

$$a_r = a_1 + r_1 d = 11 + r_1 \cdot r_1 = r_1 a + r_1 d \rightarrow a_r = -a$$

$$d_r = \frac{b-a}{n+1} \rightarrow -a = \frac{4r_1 - r_1}{n+1} \rightarrow -2n - a = 19 - r_1 a$$

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