

$$a_n = 3, 5, 7, 9, 11, 13, 15, \dots$$

$$b_n = 2, 5, 8, 11, 14, 17, \dots$$

$$a_{20} = 3 + 19 \times 2 = 41$$

$$b_{20} = 2 \times 20 - 1 = 39$$

$$c_n = 5, 11, 17, \dots$$

$$c_n = 5 + 4(n-1) = 4n-1$$

$$4n-1 \neq 41$$

$$4n \neq 42$$

$$\rightarrow n \neq 10.5$$

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$$a_1 + a_4 + a_7 = 21 \Rightarrow 3a_1 + 3d = 21 \Rightarrow \frac{a_1 + d}{a_1} = 7$$

$$a_1 + a_4 + a_7 = 10a_1 = 3a_1 + 4d = 10a_1 \Rightarrow \frac{a_1 + 4d}{a_1} = 7$$

$$\frac{a_7 - a_4 + a_1}{a_1} = \frac{3d - d + 3a_1}{a_1} = \frac{2d + 3a_1}{a_1} = -\frac{1}{3}$$

$$\begin{cases} 3a_1 + 3d = 21 \\ 3a_1 + 4d = 10 \\ \hline -d = 11 \\ d = -11 \end{cases}$$

$$a_1 + a_4 + a_7 = 10 \Rightarrow 3a_1 + 3d = 10 \Rightarrow \frac{a_1 + d}{a_1} = \frac{10}{3}$$

$$a_1 + a_4 = 10 \Rightarrow 2a_1 + 3d = 10$$

$$d = 2 \Rightarrow a_1 = 2 \Rightarrow a_n = 2 + 2(n-1) = 2n$$

$$a_{10} = 20 - 1 = 19$$

$$a_1 \neq 0 \quad S_9 = 9S_4 \Rightarrow \frac{9}{2}(a_1 + a_9) = \frac{9 \times 4}{2}(a_4 + a_1)$$

$$a_1 + a_9 = 4a_4 + 4a_1 \Rightarrow 3a_1 + 4d = 4a_1 + 4d \Rightarrow 3a_1 = 4a_1 \Rightarrow d = \frac{a_1}{3}$$

$$\frac{a_9}{a_4} = \frac{a_1 + 8d}{a_1 + 3d} = \frac{a_1 + 8 \times \frac{a_1}{3}}{a_1 + 3 \times \frac{a_1}{3}} = \frac{11a_1}{4a_1} = \frac{11}{4}$$

$$a_1 = 11$$

$$a_9 = 30 = a_1 + 8d \Rightarrow 11 + 8d = 30 \Rightarrow d = \frac{19}{8} \Rightarrow a_n = 11, 15, 19, 23, \dots$$

$$b_1 = 31$$

$$b_n = 13$$

$$31, \dots, 13$$

$$\Rightarrow a_1 + (n-1)d = 31 + (n-1)d = 13 \Rightarrow 3d = -18 \Rightarrow d = -6$$

$$-6 = \frac{13 - 31}{n-1} \Rightarrow n-1 = 3 \Rightarrow n = 4$$

تعداد اعداد

در این دنباله