

①

$$t_n \in \mathbb{N} \rightarrow \text{الف}$$

$$t_1, s \in \mathbb{N} \rightarrow \text{ب}$$

②

$$t_n \in \{7, 1, 14, 18, \dots\} \quad a, y, d, s, e$$

$$s_n = \frac{n}{e} (2a + (n-1)d) \Rightarrow s_n \in \mathbb{N} \Rightarrow (12 + (9 \times 4)) \in \mathbb{N} \rightarrow \text{الف}$$

$$\text{الخيار 2} \rightarrow s_n = \frac{n}{e} ((2 \times 11) + (n-1) \times 4) \in \mathbb{N} \rightarrow \text{ب}$$

$$\text{الخيار 2} \rightarrow a, y, s, e + (11 \times 4) \in \mathbb{N}$$

$$t_n \in 1 + \sqrt{2}, 2 + \sqrt{2}, \dots \quad d \in 1 - \sqrt{2} \quad a \in 1 + \sqrt{2} \quad \text{③}$$

$$a_{2n} - a_{2n-1} = d \Rightarrow \frac{1}{2} (1 - \sqrt{2}) \in \mathbb{Z} - 2\sqrt{2}$$

$$a_n = \omega^{2n}, \omega \times \omega^{2n}, \omega^y \Rightarrow d \in (\omega \times \omega^{2n}) - \omega^{2n} \in \mathbb{Z} \times \omega^{2n} \quad \text{④}$$

$$(\omega^{2n} \times \omega) + (\omega \times \omega^{2n}) \in \mathbb{Z} \Rightarrow \omega^{2n+1} = \omega^y \Rightarrow 2n+1 = y \Rightarrow 2n = y-1$$

$$b_n \in \mathbb{N}, x, y \Rightarrow d \in 2n - n = y - 2 \Rightarrow y = 2n + 2 \Rightarrow 2n = y - 2 \Rightarrow n = \frac{y-2}{2}$$

$$\frac{1}{n} \times \frac{1}{2} = \frac{1}{2n} \Rightarrow y = \frac{1}{2n}$$

$$y \in \frac{1}{n} \times \frac{1}{2} = \frac{1}{2n}$$

⑤

$$t_n \in \frac{2n-1}{d}, 2n-1, 4n, \dots$$

$$d \in 2n-1 - (2n-1) = 4n - (2n-1) \Rightarrow 2n \in \mathbb{N} \Rightarrow n \in \mathbb{N}$$

$$t_n \in \frac{1}{2} \Rightarrow \text{الف}$$

$$t_n \in t_{n+1} \Rightarrow t_n \in \frac{1}{2}$$

$$\Rightarrow 7n - 1 \leq 81$$