

漸化式

漸化式：前の項から、次の項の値を決める規則

(例) 正の偶数を小さいもの順に並べた数列 $\{2n\}$

$$\begin{array}{l} a_1 = 2 \\ a_2 = 4 \\ a_3 = 6 \\ a_4 = 8 \\ \vdots \\ a_{n+1} = a_n + 2 \end{array} \quad \begin{array}{l} \left. \begin{array}{l} a_2 = a_1 + 2 \\ a_3 = a_2 + 2 \\ a_4 = a_3 + 2 \end{array} \right\} \\ \leftarrow \text{漸化式} \end{array}$$

一般項 $\rightarrow a_n = 2n$

例 1 数列 $\{a_n\}$ の隣り合う 2 つの項 a_n, a_{n+1} の間に次の関係があるとき、第 2 項から第 5 項までを求めよ。

(1) $a_1 = 3, a_{n+1} = a_n + 2$

$$\begin{array}{l} a_2 = \\ a_3 = \\ a_4 = \\ a_5 = \end{array}$$

答 $a_2 = \quad, a_3 = \quad, a_4 = \quad, a_5 = \quad$

(2) $a_1 = 2, a_{n+1} = 2a_n - 1$

$$\begin{array}{l} a_2 = \\ a_3 = \\ a_4 = \\ a_5 = \end{array}$$

答 $a_2 = \quad, a_3 = \quad, a_4 = \quad, a_5 = \quad$

(3) $a_1 = 2, a_{n+1} = a_n + 2n$

$$\begin{array}{l} a_2 = \\ a_3 = \\ a_4 = \\ a_5 = \end{array}$$

答 $a_2 = \quad, a_3 = \quad, a_4 = \quad, a_5 = \quad$

問 1 数列 $\{a_n\}$ の隣り合う 2 つの項 a_n, a_{n+1} の間に次の関係があるとき、第 2 項から第 5 項までを求めよ。

(1) $a_1 = 8, a_{n+1} = a_n + 2$

$$\begin{array}{l} a_2 = \\ a_3 = \\ a_4 = \\ a_5 = \end{array}$$

答 $a_2 = \quad, a_3 = \quad, a_4 = \quad, a_5 = \quad$

(2) $a_1 = 2, a_{n+1} = 3a_n + 1$

$$\begin{array}{l} a_2 = \\ a_3 = \\ a_4 = \\ a_5 = \end{array}$$

答 $a_2 = \quad, a_3 = \quad, a_4 = \quad, a_5 = \quad$

(3) $a_1 = -5, a_{n+1} = a_n + n^2$

$$\begin{array}{l} a_2 = \\ a_3 = \\ a_4 = \\ a_5 = \end{array}$$

答 $a_2 = \quad, a_3 = \quad, a_4 = \quad, a_5 = \quad$

例 2 次の条件を満たす数列 $\{a_n\}$ の漸化式を求めよ。

(1) 1, 4, 7, 10, 13, 16, ...

答

(2) 2, 6, 18, 54, 162, 486, ...

答

問 2 次の条件を満たす数列 $\{a_n\}$ の漸化式を求めよ。

(1) 100, 98, 96, 94, 92, 90, ...

答

(2) 3, -3, 3, -3, 3, -3, ...

答

(3) 5, 6, 8, 11, 15, 20, ...

答

