

天津数列高考

1 (1) $\{a_n\}$ 的通项公式为 $a_n = 3n + 1$, $\{b_n\}$ 的通项公式为 $b_n = 3 \cdot 2^n$.

(2) ① $a_{2^n}(c_{2^n} - 1) = 9 \times 4^n - 1$.

② $\sum_{i=1}^{2^n} a_i c_i = 27 \times 2^{2n-1} + 5 \times 2^{n-1} - n - 12 (n \in \mathbf{N}^*)$.

2 (1) $a_n = 3n$, $b_n = 3^n$.

(2) $\frac{(2n-1)3^{n+2} + 6n^2 + 9}{2} (n \in \mathbf{N}^*)$

3 (1) 证明见解析.

(2) 证明见解析.

4 (1) $a_n = 3n - 2$, $b_n = 2^n$.

(2) $T_n = (3n - 4)2^{n+2} + 16$.

5 (1) $a_n = 3n - 2$, $b_n = 2^n$.

(2) $\frac{3n-2}{3} \times 4^{n+1} + \frac{8}{3}$.

6 证明见解析

7 (1) $a_n = 2^{n-1} (n \in \mathbf{N}^*)$, $b_n = 2n - 1 (n \in \mathbf{N}^*)$.

(2) $S_n = (2n - 3) \times 2^n + 3 (n \in \mathbf{N}^*)$

8 (1) $a_n = \begin{cases} 2^{\frac{n-1}{2}}, & n = 2k - 1, \\ 2^{\frac{n}{2}}, & n = 2k \end{cases}, k \in \mathbf{N}^*$.

(2) $4 - \frac{n+2}{2^{n-1}}$.

9 (1) $a_n = 2^{n-1}$

(2) $2n^2$

10 (1) $a_n = 2^{n-1}$, $b_n = n$.

(2) ① $T_n = 2^{n+1} - n - 2$.

② 证明见解析.

11 (1) $S_n = \frac{n(n+1)}{2}$, $T_n = 2^n - 1$.

(2) 4.