2016645

박강우

1.

$a_1 = a_1$

$a_2 = a_1 + 1$

$a_3 = a_1 + 2$

$a_4 = a_1 + 3$

$(a_1+2)(a_1+3) - a_1(a_1+1)$

$= 4a_1 + 6 = a_1 + a_2 + a_3 + a_4$

$\therefore \sum_{r=1}^{4} a_r = (a_3 \times a_4) - (a_1 \times a_2)$

2.

$n=1$ 일때

$T_1 = 2 = \frac{1}{3}(1+5)$

$k=n-1$ 일때

$T_k = \frac{1}{3}(1+5(-2)^{k-1})$ 이라고 가정하자.

$k=n$ 일때

$T_{k+1} = 1 - 2T_k$, Induction hypothesis 에 의하여

$= 1 - \frac{2}{3}(1+5(-2)^{k-1})$

$= \frac{1}{3} + \frac{5}{3}(-2)^k$

$= \frac{1}{3}(1+5(-2)^k)$

따라서, mathematical induction 에 의하여

$T_n = \frac{1}{3}(1+5(-2)^{n-1})$ for all $n \geq 1$