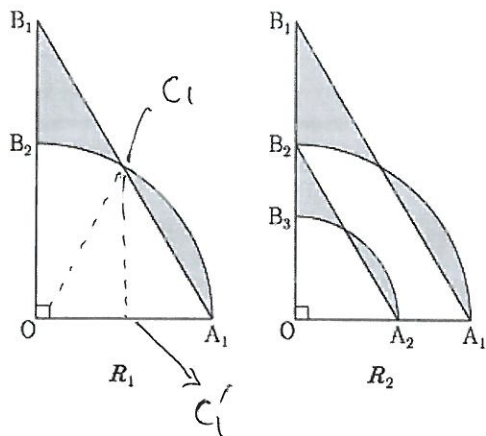




1. 개수 변화: $2 \rightarrow 2$

(첫항 $\rightarrow$ 두 번째 항 추가)

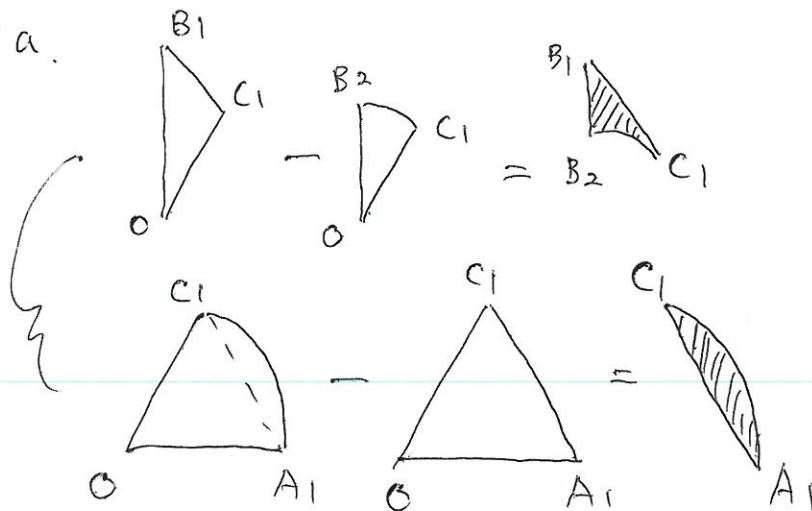
$$\left. \begin{array}{l} 1. \text{ 개수 변화: } 2 \rightarrow 2 \\ (\text{첫항} \rightarrow \text{두 번째 항 추가}) \end{array} \right\} \therefore n = \frac{2}{2} = 1$$

2. 길이 변화, 면적 변화.

$$l_r: \overline{OB_1} \rightarrow \overline{OB_2} : 4\sqrt{3} \rightarrow 4.$$

$$\therefore l_r = \frac{1}{\sqrt{3}}, \quad S_r = \frac{1}{3}.$$

3. 첫항 α .



$$\overline{OA_1} = 4, \quad \overline{OB_1} = 4\sqrt{3}, \quad \therefore \overline{B_1A_1} = 8, \quad \therefore \angle B_1A_1O = 60^\circ = \frac{\pi}{3}.$$

$$\therefore \triangle OA_1C_1 \text{ is a right triangle, } \angle B_2OC_1 = 30^\circ = \frac{\pi}{6}.$$

$$\text{따라서 } \triangle B_1OC_1 = \frac{1}{2} \times \overline{OB_1} \times \overline{OC_1} = \frac{1}{2} \times 4\sqrt{3} \times 2 = 4\sqrt{3}. \quad \dots (1)$$

$$\nabla OC_1B_2 = \frac{1}{2} \times 4^2 \times \frac{\pi}{6} = \frac{16}{12} \pi = \frac{4}{3} \pi. \quad \dots (2)$$

$$\nabla OA_1C_1 = \frac{8}{3} \pi \quad (\because \nabla OA_1C_1 = 2 \times \nabla OC_1B_2) \quad \dots (3)$$

$$\triangle OA_1C_1 = \frac{1}{2} \times 4^2 \times \sin 60^\circ = 8 \times \frac{\sqrt{3}}{2} = 4\sqrt{3}. \quad \dots (4)$$

첫항 α 는
(1)-(2)
+ (3)-(4)

$$\therefore \alpha = (4\sqrt{3} - \frac{4}{3}\pi) + (\frac{8}{3}\pi - 4\sqrt{3}) = \frac{4}{3}\pi.$$

$$\therefore \lim_{n \rightarrow \infty} S_n = \frac{\frac{4}{3}\pi}{1 - \frac{1}{3} \times 1} = 2\pi //$$