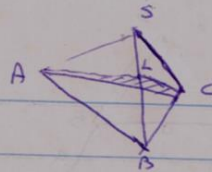
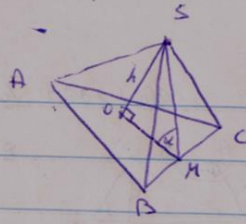


3.77
6

(10)



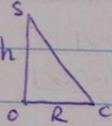
$$OM = \frac{h}{\tan \alpha} \rightarrow AO = 3OM = \frac{3h}{\tan \alpha}$$

$$AM = \frac{\sqrt{3}}{2} AB$$

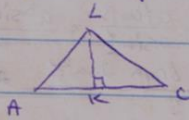
$$BC = AC = AB = \frac{2AM}{\sqrt{3}} = \frac{2 \cdot 3h}{\sqrt{3} \tan \alpha} = \frac{2\sqrt{3}h}{\tan \alpha}$$

(OASB - P AL (S)) $\Delta SBC \rightarrow$ point L on BC

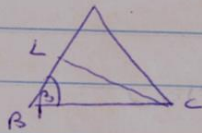
$$R = \frac{\sqrt{3}}{3} AB = \frac{2h}{\tan \alpha}$$



$$SC = \sqrt{h^2 + R^2} = \sqrt{h^2 + \frac{4h^2}{\tan^2 \alpha}} = h \sqrt{1 + \frac{4}{\tan^2 \alpha}} = \frac{h}{\tan \alpha} \sqrt{4 + \tan^2 \alpha}$$



$\Delta ALC \rightarrow$ point K on BC



$$SC^2 = SB^2 + BC^2 - 2SB \cdot BC \cdot \cos \beta$$

$$\cos \beta = \frac{BC^2}{2SB \cdot BC} = \frac{BC}{2SB} = \frac{2\sqrt{3}h}{\frac{2h}{\tan \alpha} \sqrt{4 + \tan^2 \alpha}} = \frac{\sqrt{3}}{\sqrt{4 + \tan^2 \alpha}}$$

$$LC^2 = BC^2 + 2B^2 - 2LB \cdot BC \cdot \cos \beta$$

$$LC^2 = \frac{12h^2}{\tan^2 \alpha} + \frac{h^2}{4 \tan^2 \alpha} (4 + \tan^2 \alpha) - \frac{h}{\tan \alpha} \sqrt{4 + \tan^2 \alpha} \cdot \frac{2\sqrt{3}h}{\tan \alpha} \sqrt{\frac{3}{4 + \tan^2 \alpha}}$$

$$LC^2 = \frac{12h^2}{\tan^2 \alpha} + \frac{h^2}{\tan^2 \alpha} + \frac{h^2}{4} - \frac{6h^2}{\tan^2 \alpha} = \frac{7h^2}{\tan^2 \alpha} + \frac{h^2}{4}$$

$$LC = h \sqrt{\frac{7}{\tan^2 \alpha} + \frac{1}{4}} = \frac{h}{2 \tan \alpha} \sqrt{28 + \tan^2 \alpha}$$

$$LK^2 = LC^2 - KC^2 = \frac{7h^2}{\tan^2 \alpha} + \frac{h^2}{4} - \frac{3h^2}{\tan^2 \alpha} = \frac{4h^2}{\tan^2 \alpha} + \frac{h^2}{4}$$

$$LK = \frac{h}{2 \tan \alpha} \sqrt{16 + \tan^2 \alpha}$$

$$S_{ALC} = \frac{AC \cdot LK}{2} = \frac{1}{2} \cdot \frac{2\sqrt{3}h}{\tan \alpha} \cdot \frac{h}{2 \tan \alpha} \sqrt{16 + \tan^2 \alpha} = \frac{h^2 \sqrt{48 + 3 \tan^2 \alpha}}{2 \tan^2 \alpha} =$$

$$= \frac{2\sqrt{3}h^2}{2 \tan^2 \alpha} \cdot \frac{1}{2 \tan \alpha} \sqrt{16 + \frac{1}{\cot^2 \alpha}} = \frac{\sqrt{3}h^2}{2 \tan \alpha} \cdot \frac{1}{\tan \alpha} \cdot \sqrt{\frac{16 \cot^2 \alpha + 1}{\cot^2 \alpha}} =$$

$$= \frac{\sqrt{3}h^2}{2 \tan \alpha} \cdot \frac{1}{\tan \alpha \cot \alpha} \sqrt{16 \cot^2 \alpha + 1} = \frac{\sqrt{3}h^2}{2 \tan \alpha} \sqrt{16 \cot^2 \alpha + 1} = \frac{h^2}{2} \sqrt{3} \cot \alpha \sqrt{16 \cot^2 \alpha + 1}$$

(11) $V = \frac{1}{3} \cdot S_{ALC} \cdot h = \frac{1}{3} \cdot \frac{\sqrt{3}}{4} \cdot \left(\frac{2\sqrt{3}h}{\tan \alpha}\right)^2 \cdot h = \frac{1}{3} \cdot \frac{\sqrt{3}}{4} \cdot 12h^2 \cot^2 \alpha \cdot h = \sqrt{3} h^3 \cot^2 \alpha$