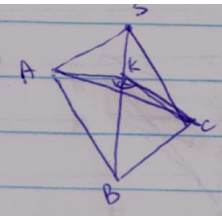
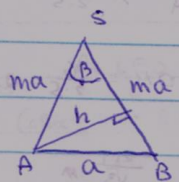
46
6





$$a^2 = 2m^2a^2 - 2m^2a^2\cos\beta$$

$$\cos\beta = \frac{a^2(2m^2-1)}{2m^2a^2} = \frac{2m^2-1}{2m^2} \rightarrow \sin\beta = \sqrt{\frac{4m^4-4m^4+4m^2-1}{4m^4}} = \frac{\sqrt{4m^2-1}}{2m^2}$$

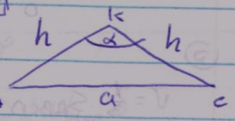
$$S_{ABC} = \frac{m^2a^2\sin\beta}{2} = \frac{mah}{2} \rightarrow \boxed{h = ma\sin\beta} = \frac{ma\sqrt{4m^2-1}}{2m^2} = \frac{a\sqrt{4m^2-1}}{2m}$$

$$a^2 = 2h^2 - 2h^2\cos\alpha$$

$$\cos\alpha = \frac{2h^2-a^2}{2h^2} = 1 - \frac{a^2}{2h^2} = 1 - \frac{2a^2}{2\cdot\frac{a^2(4m^2-1)}{4m^2}}$$

$$= 1 - \frac{2m^2}{4m^2-1} = \frac{2m^2-1}{4m^2-1} \Rightarrow \sin\alpha = \sqrt{1-\cos^2\alpha} = \sqrt{1-\frac{4m^4-4m^2+1}{16m^4-8m^2+1}} =$$

$$= \sqrt{\frac{12m^4-4m^2}{(4m^2-1)^2}} = \frac{2m\sqrt{3m^2-1}}{4m^2-1}$$



א. $3m^2-1 \geq 0$ ← $m \geq \sqrt{\frac{1}{3}}$ (או $m \leq -\sqrt{\frac{1}{3}}$ אין פתרון, פתרון שלילי)

ב. $m = \sqrt{\frac{1}{3}}$ נקבל $\sin\alpha = 0$ ← $\alpha = 0$

$m \to \infty$ נקבל $\sin\alpha = \frac{2m\sqrt{3m}}{4m^2} = \frac{\sqrt{3}}{2}$ ← $\alpha \to 60°$, לכן $0° < \alpha < 60°$