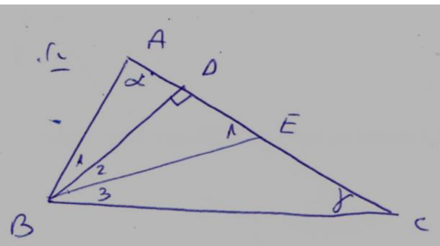
3.95
2



$\sphericalangle B_1 = 90 - \alpha$

$\sphericalangle B_1 + \sphericalangle B_2 = \dfrac{180-\alpha-\gamma}{2} = 90 - \tfrac{1}{2}\alpha - \tfrac{1}{2}\gamma$

$\sphericalangle B_2 = 90 - \tfrac{1}{2}\alpha - \tfrac{1}{2}\gamma - (90-\alpha)$
$= \tfrac{1}{2}(\alpha - \gamma)$

$\sphericalangle B_3 = 90 - \tfrac{1}{2}\alpha - \tfrac{1}{2}\gamma$

$\sphericalangle E_1 = \sphericalangle B_3 + \sphericalangle C = 90 - \tfrac{1}{2}\alpha + \tfrac{1}{2}\gamma$
$= 90 - \tfrac{1}{2}(\alpha - \gamma)$

$$\frac{S_{ABC}}{S_{BDE}} = \frac{\frac{\cancel{BD}\cdot AC}{\cancel{2}}}{\frac{\cancel{BD}\cdot DE}{\cancel{2}}} = \frac{AC}{DE}$$

(*) $S_{BED} = \dfrac{DE \cdot S_{ABC}}{AC}$

$\underline{\Delta ABC:}$ $\dfrac{AC}{\sin(\alpha+\gamma)} = \dfrac{BC}{\sin\alpha} \rightarrow BC = \dfrac{AC\cdot\sin\alpha}{\sin(\alpha+\gamma)}$

$\dfrac{AC}{\sin(\alpha+\gamma)} = \dfrac{AB}{\sin\gamma} \rightarrow AB = \dfrac{AC\cdot\sin\gamma}{\sin(\alpha+\gamma)}$

$\underline{\Delta ABD:}$ $BD = AB\cdot\sin\alpha = \dfrac{AC\cdot\sin\gamma\sin\alpha}{\sin(\alpha+\gamma)}$

$\underline{\Delta BDE:}$ $DE = BD\tan\sphericalangle B_2$
$= \dfrac{AC\cdot\sin\gamma\sin\alpha}{\sin(\alpha+\gamma)} \cdot \tan\left(\dfrac{\alpha-\gamma}{2}\right)$

$$(*)\quad S_{BED} = \frac{\dfrac{\cancel{AC}\cdot\sin\gamma\sin\alpha\tan\left(\frac{\alpha-\gamma}{2}\right)}{\sin(\alpha+\gamma)}}{\cancel{AC}} \cdot \overset{=S}{S_{ABC}}$$

$$= \frac{S\cdot\sin\gamma\sin\alpha\tan\left(\frac{\alpha-\gamma}{2}\right)}{\sin(\alpha+\gamma)}$$