The index of refraction for a medium through which light is passing is the ratio of the velocity of light in free space to the velocity of light in the medium. For light passing symmetrically through a glass prism, the index of refraction n is given by the equation

$$n=\frac{sin⁡\left[\frac{1}{2}(α+β)\right]}{\sin(\frac{β}{2})}$$

where $α$ is the deviation angle and $β$ is the angle of the apex of the prism. (Pictured in the diagram)

If $β=\frac{π}{3}$, show that that the index of refraction is equal to $\sqrt{3}\sin(\frac{α}{2})+\cos(\frac{α}{2})$

