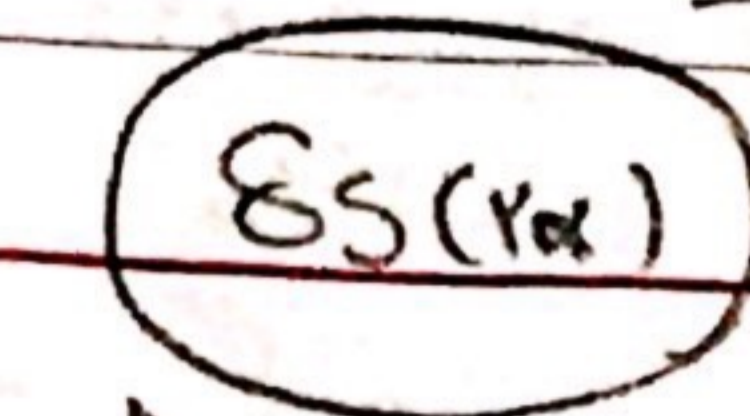


$$\frac{\sin^2 \alpha + \epsilon \delta s^2 \alpha}{1 + \delta s^2 \alpha} = \frac{\delta s^2 \alpha + \epsilon \sin^2 \alpha}{1 + \sin^2 \alpha} = \frac{\sin^2 \alpha + \epsilon(1 - \sin^2 \alpha)}{1 + (1 - \sin^2 \alpha)} = \frac{\delta s^2 \alpha + \epsilon(1 - \delta s^2 \alpha)}{1 + (1 - \delta s^2 \alpha)}$$

$$= \frac{\sin^2 \alpha + \epsilon \sin^2 \alpha + \epsilon}{1 - \sin^2 \alpha} = \frac{\delta s^2 \alpha - \epsilon \delta s^2 \alpha + \epsilon}{1 - \delta s^2 \alpha} = \frac{(1 - \sin^2 \alpha)^2 - (\epsilon - \delta s^2 \alpha)^2}{(1 - \sin^2 \alpha)^2 - (\epsilon - \delta s^2 \alpha)^2} = \frac{1 - \sin^2 \alpha - \epsilon + \delta s^2 \alpha}{1 - \sin^2 \alpha - \epsilon + \delta s^2 \alpha} = \delta s^2 \alpha - \sin^2 \alpha$$

$\tan \alpha = \frac{\epsilon}{r}$ $\epsilon \rightarrow$ ارتفاع



$\sin \alpha = \frac{\epsilon}{r}$
 $\delta s \alpha = \frac{\epsilon \delta s \alpha}{r} \Rightarrow \frac{\epsilon}{r} \times \frac{r}{\epsilon} = \frac{-1r}{r \delta}$

$\sin(\frac{9\pi}{r} + \alpha) \delta s(\frac{11\pi}{r} - \alpha) - \tan(\alpha - \frac{11\pi}{r}) = \delta s \alpha \times -\sin \alpha + \delta t \alpha$

$\sin(\frac{2\pi}{r} + \frac{11\pi}{r} + \alpha) \delta s(\frac{11\pi}{r} + \frac{11\pi}{r} - \alpha) - \tan(\frac{11\pi}{r} - \alpha) = -\delta t \alpha$

$\sin(\frac{11\pi}{r} + \alpha) = \delta s \alpha \quad \delta s(\frac{11\pi}{r} - \alpha) = -\sin \alpha \Rightarrow \frac{11\pi}{r} - \frac{11\pi}{r} = \frac{11\pi}{100}$

$n = \frac{11\pi}{r} \left\{ \frac{11\pi}{r} + \sqrt{r}(-1) = \frac{11\pi}{r} - 1 \right\} \frac{1}{r} = \sin \frac{11\pi}{r} = r \sin \frac{11\pi}{r} \times \delta s \frac{11\pi}{r}$

$(r \delta s \frac{11\pi}{r} + \sqrt{r} \sin \frac{11\pi}{r} - \sqrt{r} \delta s \frac{11\pi}{r}) = r \delta s \frac{11\pi}{r} + \sqrt{r} \sin \frac{11\pi}{r} - \sqrt{r} \delta s \frac{11\pi}{r}$

$\Rightarrow \sin \frac{11\pi}{r} \times \delta s \frac{11\pi}{r} = \frac{1}{r} \Rightarrow (\sin \frac{11\pi}{r} - \delta s \frac{11\pi}{r})^2 = 1 - r \sin \frac{11\pi}{r} \times \delta s \frac{11\pi}{r} = \frac{1}{r}$

$\frac{\tan \alpha - \sin \alpha}{\sin \alpha - \delta s \alpha} = \frac{\frac{1}{10} - \frac{1}{14}}{\frac{1}{14} - \frac{1}{10}} = \frac{1(14 - 10)}{14 \times 10} = \frac{-14}{100} \quad \delta s \alpha = \frac{10}{14}$

$\Rightarrow \tan \alpha = \frac{r \tan \alpha}{1 - \tan^2 \alpha} = \frac{r(\frac{1}{r})}{1 - \frac{1}{r^2}} = \frac{1}{\frac{r^2 - 1}{r^2}} = \frac{r^2}{r^2 - 1} = \frac{14}{10}$

$\tan(\frac{\alpha}{r}) = \frac{1}{r} \Rightarrow r \tan \alpha + 1 = \frac{1}{\delta s \alpha} \Rightarrow \frac{14}{10} + \frac{14}{10} = \frac{14}{10} \Rightarrow \delta s \alpha = \frac{14}{10}$

$r \sin \alpha < \sin r \alpha$

$\sin r \alpha = r \sin \alpha \times \delta s \alpha$

$0 < \frac{\delta t \alpha}{\sin \alpha}$

$r \sin \alpha - r \sin \alpha \delta s \alpha < 0 \Rightarrow r \sin \alpha (1 - \delta s \alpha) < 0$

$0 < \frac{\delta s \alpha}{\sin \alpha} \Rightarrow$

$0 < \frac{\delta s \alpha}{\sin r \alpha} \Rightarrow \delta s \alpha > 0$

پس $\delta s \alpha > 0$

$\sin \alpha < 0$