



$$\rho = -ka \int \frac{d\theta}{(1+k\sec\theta)^2} \quad \frac{1}{k} \frac{d\theta}{2} = t$$

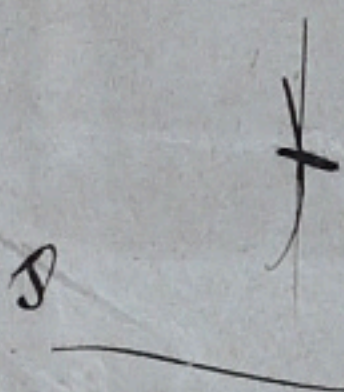
$$\int \frac{d\theta}{(1+k\sec\theta)^2} = 2 \int \frac{(1+t)dt}{(1+t^2+k \frac{2t}{t^2})^2}$$



$$\rho = -2ka \int \frac{(1+t^2)dt}{(1+2kt+t^2)^2}$$

$$\frac{\rho}{-2ka} = \int \frac{dt}{1+2kt+t^2} - 2k \int \frac{t dt}{(1+2kt+t^2)^2}$$

$$\frac{d\theta}{ds} = \frac{1}{\rho} \quad s = \int \rho d\theta$$



$$s_1 = \rho$$

$$s_1 = \rho \rho'$$

$$\frac{d\theta}{ds} = \frac{1}{\rho}$$

$$\rho_1 = \frac{ds_1}{d\theta}$$

$$\left\{ \begin{aligned} s_1 &= - \int \frac{ka d\theta}{(1+k\sec\theta)} \\ \rho_1 &= - \frac{ka}{(1+k\sec\theta)^2} \end{aligned} \right.$$

$$s_2 = \rho_1$$

$$\rho_2 = \frac{ds_2}{d\theta}$$

$$\left( \begin{aligned} s_2 &= - \frac{ka}{(1+k\sec\theta)^2} \\ \rho_2 &= \frac{2ka \cos\theta}{(1+k\sec\theta)^3} \end{aligned} \right.$$

$$\frac{s}{\rho} = - \frac{1+k\sec\theta}{2k\cos\theta}$$

$$(1+k\sec\theta) = \sqrt{-\frac{ka}{s}}$$

$$\cos\theta = - \frac{\rho s}{4ks^3}$$

$$k^2 = \left( \sqrt{-\frac{ka}{s}} - 1 \right)^2 = \frac{kas^2}{4s^3}$$

$$\frac{s\sqrt{s}}{\rho} = - \frac{\sqrt{-ka}}{2k\cos\theta}$$

$$k^2 = 1 - 2\sqrt{-\frac{ka}{s}} - \frac{ka}{s} - \frac{kas^2}{4s^3}$$

$$\frac{s^3}{\rho^2} = \frac{-ka}{4k^2\cos^2\theta}$$