$$y = y_0 + v_{0y}t + \frac{1}{2}a_y t^2 = v_0 \sin(\Theta)\, t - \frac{1}{2}gt^2$$

$$x = x_0 + v_{0x}t + \frac{1}{2}a_y t^2 = v_0 \cos(\Theta)\, t$$

$$y = xtan(\alpha)$$

$$t = \frac{x}{v_0 \cos(\Theta)}$$

$$x = \frac{RS}{\sqrt{1 + tan^2(\alpha)}}$$

$$xtan(\alpha) = v_0 \sin(\Theta)\frac{x}{v_0 \cos(\Theta)} - \frac{1}{2}g\left(\frac{x}{v_0 \cos(\Theta)}\right)^2$$

$$xtan(\alpha) = xtan(\Theta) - \frac{gx^2}{2vo^2 cos^2(\Theta)}$$

$$0 = x(tan(\Theta) - \tan(\alpha)) - \frac{gx^2}{2vo^2 cos^2(\Theta)}$$

$$0 = x\left[tan(\Theta) - \tan(\alpha) - \frac{gx}{2vo^2 cos^2(\Theta)}\right]$$

$$tan(\Theta) - \tan(\alpha) = \frac{gx}{2vo^2 cos^2(\Theta)}$$

$$x = \frac{2vo^2 cos^2(\Theta)(tan(\Theta) - \tan(\alpha))}{g}$$

$$\frac{RS}{\sqrt{1 + tan^2(\alpha)}} = \frac{2vo^2 cos^2(\Theta)(tan(\Theta) - \tan(\alpha))}{g}$$

$$gRS = 2vo^2 cos^2(\Theta)[tan(\Theta) - \tan(\alpha)]\sqrt{1 + tan^2(\alpha)}$$