WS11 Refracting surface
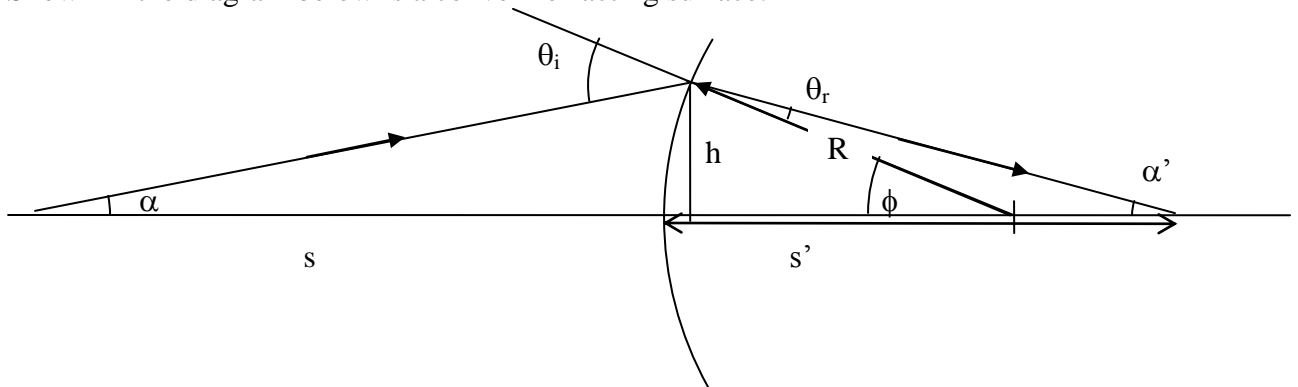Our goal is to determine the location of the image of a point source based upon the point sources distance from the mirror surface and the radius of curvature of the mirror.

Useful information: small angle approximation $\tan \phi \approx \sin \phi \approx \phi$, $\cos \phi \approx 1$ and Snell's law.

Shown in the diagram below is a convex refracting surface.

Relate θ_i to θ_r.

What assumption has been made with respect to the indices of refraction of the two mediums? How do you know?

What would happen if the two indices were exchanged?

Relate the angles θ_i, α and ϕ. Solve for θ_i.

Relate the angles θ_r, α', and ϕ. Solve for θ_r.

Rewrite Snell's law using the two relations you just found.

Apply the small angle approximation to this expression.

Relate the angles to a ratio of h to something else and come up with an expression relating index of refraction, radius of surface, image distance and object distance.