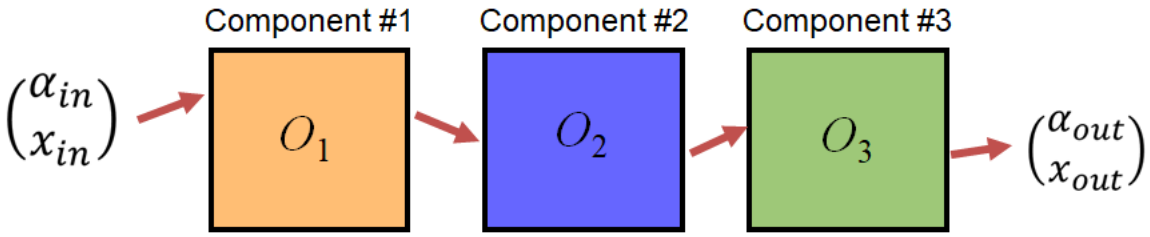
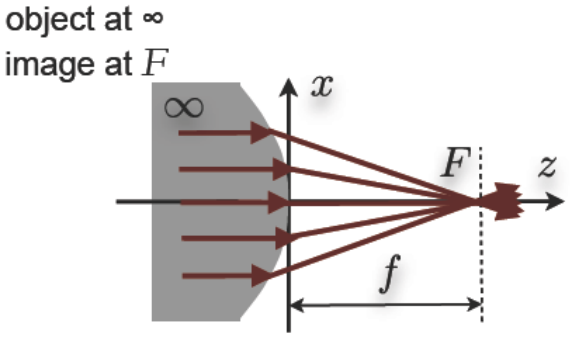
Optics: Assignment 3

Due: 5th November 2020, Marks = 15

Q1. By using the elemental matrices, we may ray trace through an arbitrarily long cascade of optical elements provided the paraxial approximation remains valid throughout. Hence, write a CODE in your preferred language for "n" number of sequential elements (thin positive and negative lenses) to get the final image location with magnification. Please provide detailed explanation about the code. (10)



Q2: Please solve to find the equation for perfect refractor focuser to be hyperboloid using the Fermat's principle. (5)



hyperboloidal refractor

$$\left(s-\frac{1}{n+1}f\right)^2-\frac{1}{n^2-1}x^2=\left(\frac{1}{n+1}f\right)^2$$