The above figure is Figure 2.5, p. 13, from Schroeder (1987). Applying the equation of [paraxial refraction](http://scienceworld.wolfram.com/physics/ParaxialRefraction.html) with http://scienceworld.wolfram.com/physics/timg95.gif (air) to each surface gives

|  |  |
| --- | --- |
| http://scienceworld.wolfram.com/physics/timg96.gif | (1) |

|  |  |
| --- | --- |
| http://scienceworld.wolfram.com/physics/timg97.gif | (2) |

Using http://scienceworld.wolfram.com/physics/timg98.gif,

|  |  |
| --- | --- |
| http://scienceworld.wolfram.com/physics/timg99.gif | (3) |

Adding (1) and (3) gives

|  |  |
| --- | --- |
| http://scienceworld.wolfram.com/physics/timg100.gif | (4) |

For conjugate points,

|  |  |
| --- | --- |
| http://scienceworld.wolfram.com/physics/timg101.gif | (5) |

As is derived by Morgan,

|  |  |
| --- | --- |
| http://scienceworld.wolfram.com/physics/timg102.gif | (6) |

The ends of the [lens](http://scienceworld.wolfram.com/physics/Lens.html) are at

|  |  |  |  |
| --- | --- | --- | --- |
| http://scienceworld.wolfram.com/physics/timg103.gif | http://scienceworld.wolfram.com/physics/timg58.gif | http://scienceworld.wolfram.com/physics/timg104.gif | (7) |
| http://scienceworld.wolfram.com/physics/timg105.gif | http://scienceworld.wolfram.com/physics/timg58.gif | http://scienceworld.wolfram.com/physics/timg106.gif |  |