G17MAGNP

Magnifier in the Near Point Configuration
Magnification and Angular magnification.

f1 focal length of the magnifier, f2 focal length of the eye.

$f1 := 12$ Distance between the two lenses is $D := 0$

1. Step. Determination of x1o if x1i is -25

$xi1 := -25$ $\quad xo1 := \dfrac{-1}{\left(\dfrac{1}{f1}\right) - \dfrac{1}{xi1}}$ $\quad xo1 = -8.108$

2. Step.Determination of xi2. Focal length of eye lens is f2 = 1.852

$xo2 := -25$ $\quad f2 := 1.852$

$xi2 := \dfrac{1}{\left(\dfrac{1}{f2}\right) + \dfrac{1}{xo2}}$ $\quad xi2 = 2$

3. Magnification of Magnifier

$m1 := \dfrac{xi1}{xo1}$ $\quad m1 = 3.083$

or

$m1 := 1 - \dfrac{xi1}{f1}$ $\quad m1 = 3.083$

If we set D = 0 we have for xi1 = -25, that is for m1 = 1+25/f1 and that is the same expression as the angular magnification.

$MP := 1 + \dfrac{25}{f1}$ $\quad MP = 3.083$

Numerically we get for the Magnification and the angular magnification the same values.