A6COMPLANS

For the aplanatic lens, both, spherical aberration and coma are zero. For the calculation of coma, the incident light is assumed to be parallel.

1. The aplanatic lens $xo := -30$ $n := 1.5$ $\rho := 1$ $\beta \equiv .05$

$r2 := \frac{xo \cdot n}{n + 1}$ $xi := n \cdot xo$ xo = r1

$r1 := -30$

$f := \frac{n + 1}{n - 1} \cdot r2$

and for π, σ, W, G

$\pi := \frac{xi + xo}{(xi - xo)}$ $\pi = 5$ $\sigma := \frac{r2 + xo}{r2 - xo}$ $\sigma = -4$

$W(n) := \frac{3 \cdot (n + 1)}{4 \cdot n \cdot (n - 1)}$ $G(n) := \frac{3 \cdot (2 \cdot n + 1)}{4 \cdot n}$

2. The correction for coma

$$Co(\rho) := \frac{\rho^2 \cdot \tan(\beta)}{f^2} \cdot (W(n) \cdot \sigma + G(n) \cdot \pi)$$

Coma is eliminated if Co = 0, that is $(W(n)\sigma+G(n)\pi)$ is 0, or $\sigma = -\pi(G(n)/W(n))$

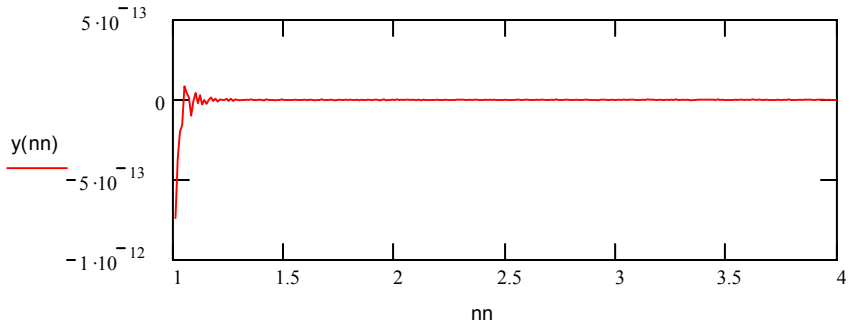
3. Graph of y(n) = $(W(n) \cdot \sigma + G(n) \cdot \pi)$ We double up and use nn,xxo,pp,ss

$r2(nn) := xo \cdot \frac{nn}{nn + 1}$ $nn := 1 , 1.01 .. 4$

$W(nn) := \frac{3 \cdot (nn + 1)}{4 \cdot nn \cdot (nn - 1)}$ $G(nn) := \frac{3 \cdot (2 \cdot nn + 1)}{4 \cdot nn}$

$$pp(nn) := \frac{nn \cdot xo + xo}{(nn \cdot xo - xo)} \qquad ss(nn) := \frac{r2(nn) + r1}{r2(nn) - r1}$$

$$y(nn) := W(nn) \cdot ss(nn) + G(nn) \cdot pp(nn)$$



Coma is zero for most values of nn