

G8SINGCV

Concave single refracting surface

r is negative, light from left propagating from medium with n_1 to medium with n_2
 x_o on left of surface (negative)

Calculation of graph for x_i as function of x_o over the total range of x_o .

graph for x_i as function of x_o over the range of x_o to the left of x_{of} .

graph for x_i as function of x_o over the range of x_o to the right of x_{of} .

$$r \equiv -10 \quad n_1 := 1 \quad n_2 := 1.5$$

Image focus

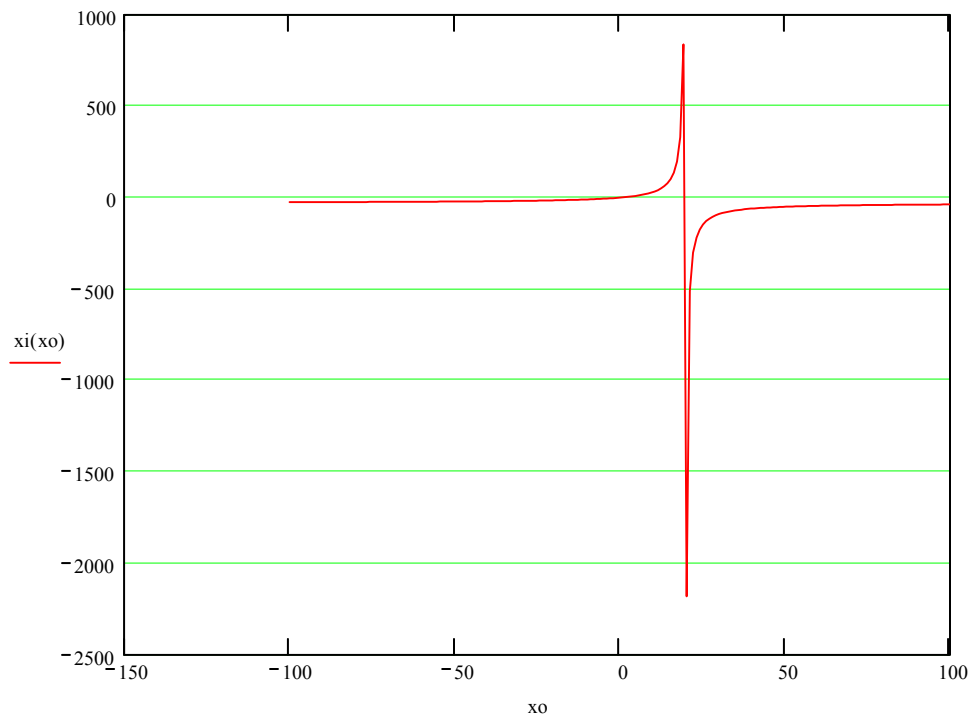
Object focus

$$x_{if} := n_2 \cdot \frac{r}{n_2 - n_1} \quad x_{if} = -30$$

$$x_{of} := n_1 \cdot \frac{r}{n_1 - n_2} \quad x_{of} = 20$$

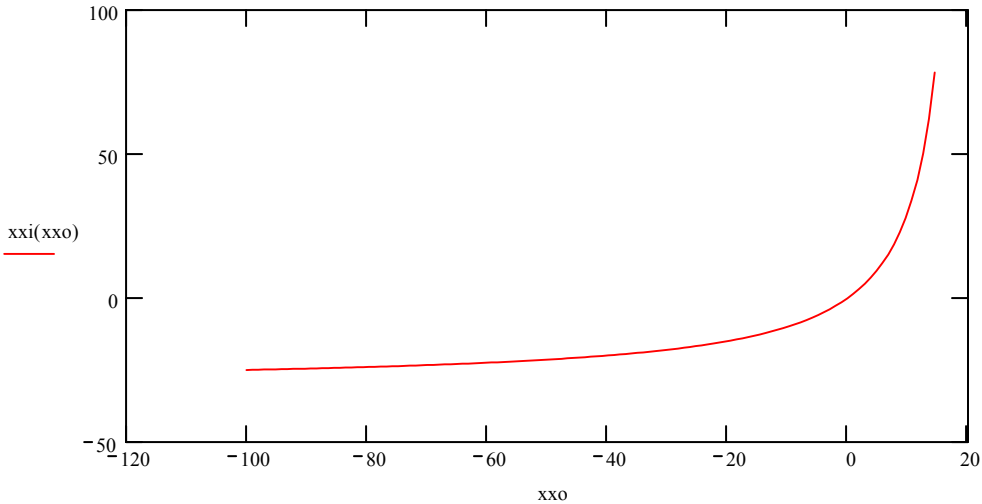
$$x_o := -100.001, -99.031 \dots 100$$

$$x_i(x_o) := \frac{n_2}{\left(\frac{n_2 - n_1}{r} \right) + \frac{n_1}{x_o}}$$



$$\text{xxo} := -100.001, -99.031 \dots 15$$

$$\text{xxi}(\text{xxo}) := \frac{\text{n2}}{\left(\frac{\text{n2} - \text{n1}}{\text{r}}\right) + \frac{\text{n1}}{\text{xxo}}}$$



$$\text{xxxo} := 22.001, 23.031 \dots 50$$

$$\text{xxx}\text{i}(\text{xxxo}) := \frac{\text{n2}}{\left(\frac{\text{n2} - \text{n1}}{\text{r}}\right) + \frac{\text{n1}}{\text{xxxo}}}$$

