Types of Lenses

http://laxmi.nuc.ucla.edu:8248/M248 03/HHtun 01/sld033.htm
Examples

1. What is the focal length of a Plexiglas plano-convex lens that has a radius of 15.7 cm ?

$$
\begin{aligned}
& f=? \\
& n_{\text {len }}=1.51 \quad \frac{1}{f}=\left(\frac{n_{\text {lens }}}{n_{0}}-1\right)\left(\frac{1}{R_{1}}+\frac{1}{R_{2}}\right) \\
& n_{0}=1.0003 \quad \frac{1}{f}=\left(\frac{1.51}{1.003}-1\right)\left(\frac{1}{\infty}+\frac{1}{15.7}\right) \\
& R_{1}=\infty 0 \mathrm{~cm} \\
& R_{2}=+15.7 \mathrm{~cm} \\
& \frac{1}{f}=(0.5095)(0+0.06369) \\
& \frac{1}{f}=(0.5095)(0.06369) \\
& \frac{1}{f}=0.03245 \\
& f=(0.03245)^{-1} \\
& f=30.8 \mathrm{~cm} \text { converging. }
\end{aligned}
$$

