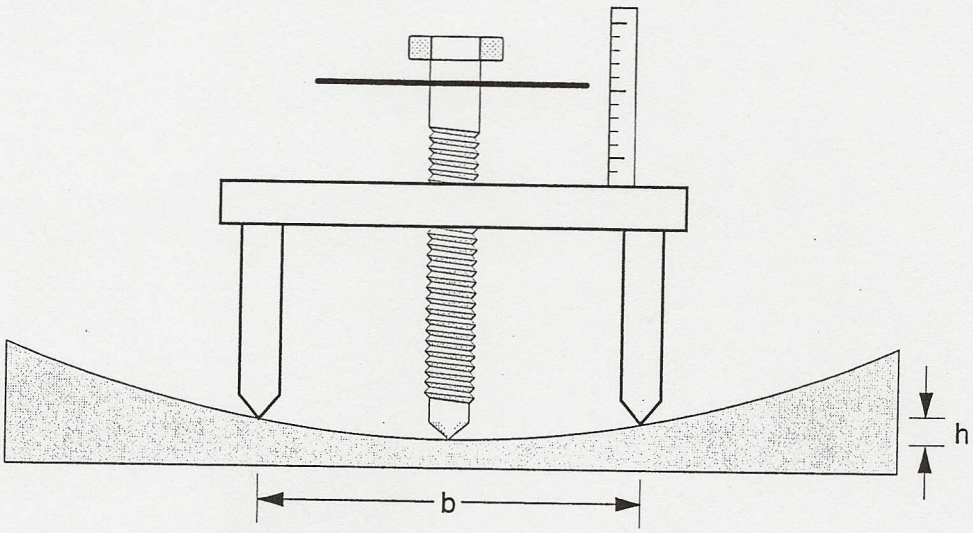

Figure 4: Schematic illustration of how to use a spherometer to measure the radius of curvature of a lens. Note, h measures the difference in the lengths of the center screw and the three feet and b is the length of the side of the triangle formed by the feet. **DO NOT USES THE SPHEROMETER ON THE MIRROR!**

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Use the spherometer to measure the radii of curvature of each surface of each of the lenses. The configuration is sketched in Fig. 4. First, measure b, the separation of the legs. Next, calibrate the zero point of the dial and screw on a flat surface. Then, determine the radius of curvature R from a measurement of the height h by using the equation

$$R = \frac{b^2/3 + h^2}{2h}.$$

$$\frac{1}{f} = (n-1)\left(\frac{1}{R_1} - \frac{1}{R_2}\right),$$

relates the focal length to the index of refraction of the lens medium, n, and to the radii of curvature of the front (entrance), R_1, and back, R_2, surfaces of the lens. The following sign conventions have generally been adopted for lenses. For a double concave lens $R_1 < 0$, $R_2 > 0$, and $f < 0$. For a double convex lens $R_1 > 0$, $R_2 < 0$, and $f > 0$. If one side of the lens is flat this corresponds to $R = \infty$.