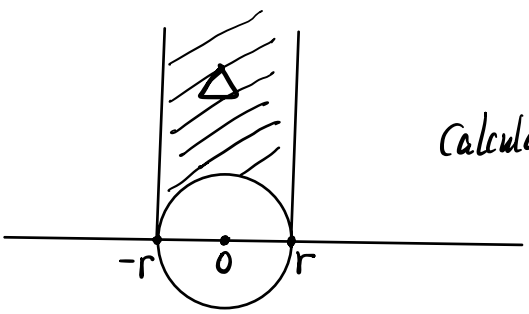
8.5.1 — 8.5.5

1. Use the existence/uniqueness of the equidistant line for any two points (and the arguments similar to the case of $\mathbb{R}^2$) to complete the proof of 3 reflection theorem for the non-Euclidean geometry (the upper half plane).

2. Use calculus to verify that the area of the limit triangle

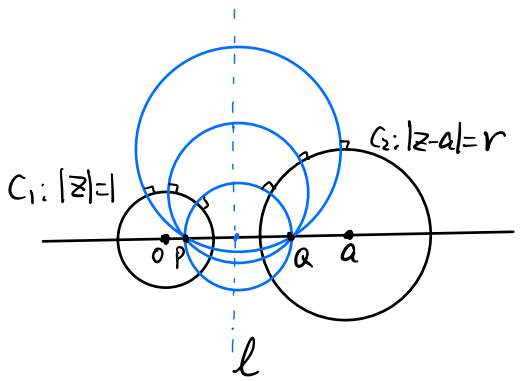
$$\text{Area}(\triangle) = \pi:$$



Calculate double the integral: $\int_{\triangle} \frac{dx\,dy}{y^2}$

Does this integral depend on the radius r?

3. Consider 2 circles (non-Euclid lines) C_1, C_2 that do not intersect:



Prove that the circles that are orthogonal to both C_1 and C_2 have centers lying on a line ℓ and all pass through 2 points P and Q.

(Use equations to find equation for ℓ and the coordinates for P, Q)