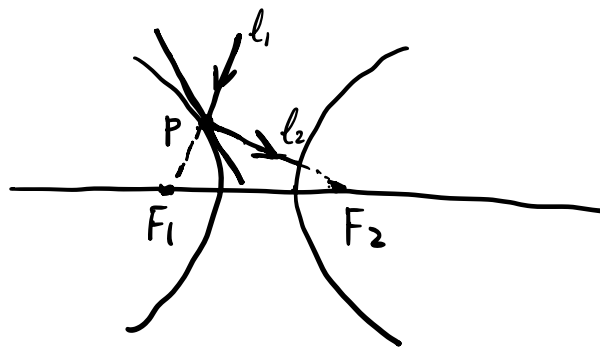
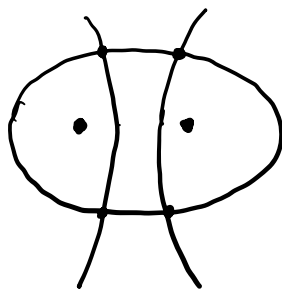


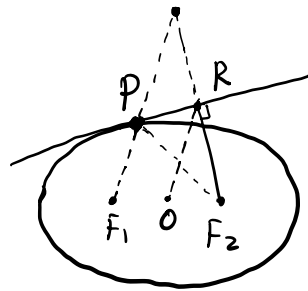
1. Give a description of tangents to hyperbola. Then use this to show that if the ray l_1 passes through F_1 (after extension), then its reflection l_2 passes through F_2 .



2. Guess a nice property of tangents to two confocal conics (i.e. an ellipse and a hyperbola with the same foci) at the intersection points and prove it.



3. Prove that the orthogonal projection R of a foci F onto a tangent of an ellipse lie on the circle with center O and radius a : (Hint: prove $|OR| = a = \frac{|F_1P| + |F_2P|}{2}$)



4. Classify the following conic curves.

Find their centers and axes.

(i) $11x^2 + 6xy + 3y^2 - 12x - 12y - 12 = 0$

(ii) $x^2 - 2xy + y^2 - 10x - 6y + 25 = 0$

5.2.1 - 5.2.2:

Use just straightedge to create a perspective view of the plane filled with congruent hexagons.

See below for a sample:

