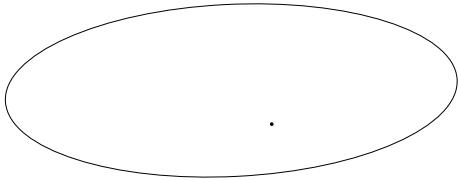


Physics Cup 2017 - Problem 4. 15th May 2017

Ellips depicted in the figure below represents a real image of a circle, created by an ideal thin lens. The dot inside it depicts the image of the center of the circle. Both the ellips and the main optical axis of the lens lay in the plane of the figure. Reconstruct the position of the lens (ie. the position of the centre and the orientation).

Remark: you need to copy the ellips onto a sheet of paper and find there the position of the lens, eg. by using geometrical constructions. Alternatively, you can use Geogebra, <https://www.geogebra.org/>.



Hints: Read through the solutions of the Problem No 7 of Physics Cup-2012, <http://www.ipho2012.ee/physicscup/problem-no-7/solution/>.

Further hints: draw two arbitrary lines through the image of the circle's centre and study the quadrilateral formed by the intersection points of these lines with the ellipse.

Results thus far (by the order of submission):

Marco Malandrone: 2.5937

Dylan Toh: 2.3579

Matias Arola: 2.1436

Siddharth Tiwary: 1.9487

Kaarel Hänni: 1.7716

Reinis Irmejs: 1.6105

Diogo Netto: 1.4641

Richard Luhtaru: 1.3310

Kaarel Kivilsalu: 1.2100

Gabriel Golfetti: 1.100

Victor Almeida Ivo: 1.000

Non-official participants (by the order of submission):

Taavet Kalda: 2.5937

Results thus far (total for Pr 1 — Pr 3):

Marco Malandrone: 9.2993

Siddharth Tiwary: 8.8296

Diogo Netto: 6.8256

Kaarel Hänni: 6.2752

Victor Almeida Ivo: 5.5520

Akihiro Watanabe: 5.2021

Gabriel Golfetti: 5.1051

Dylan Toh: 4.3067

Matias Arola: 2.1436

Elvinas Ribinskas: 1.9487

Faizal Husni: 1.7716

Elene Kravishvili: 1.7716

Jacob Teo: 1.6105

Richard Luhtaru: 1.3310

Kaarel Kivilsalu: 1.2100

Non-official participants (by the order of submission):

Taavet Kalda: 9.2389

Reinis Irmejs: 1.6105