1 Sight

A sight is constituted of an objective L_1 which is a converging lens of focal length $f_1' = 10$ cm, and an ocular L_2 which is a converging lens of focal length $f_2' = 2$ cm. The distance between the two lenses is modifiable and called D.

(1) Determine D such that the optical system is afocal. Represent a set of light ray coming from an infinite point in a direction with an angle α with the axis of the sight. Calculate the angular magnification $G = \alpha'/\alpha$, where α' is the output angle.

(2) We place an object AB located at 20 cm on the left of O_1. Find the distance D such at the eye of an observer can see clearly the image.

(3) Calculate the quantity $P = \alpha'/AB$. Comment.