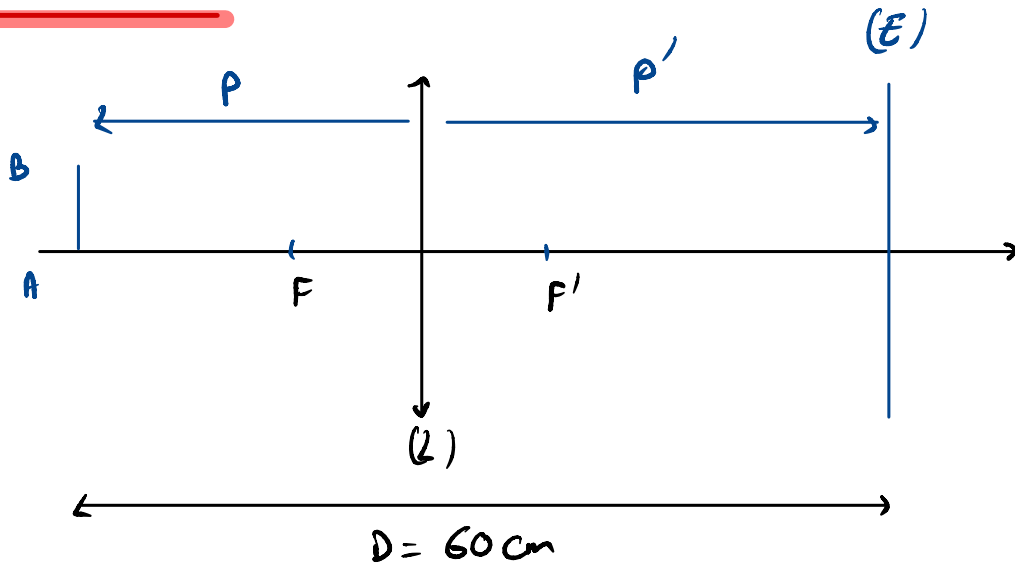


Exercice 4

1 Relation de Conjugaison de Descartes.

$$\frac{1}{p'} - \frac{1}{p} = \frac{1}{f'}$$

or D est fixe

$$p' - p = D$$

$$\text{d'où } p = p' - D$$

$$\frac{1}{p'} - \frac{1}{p' - D} = \frac{1}{f'} \quad (\Leftrightarrow) \quad \frac{p' - D - p'}{p'(p' - D)} = \frac{1}{f'}$$

$$p'^2 - p'D + Df' = 0$$

$$\Delta = D^2 - 4Df' \quad \text{il existe des solutions si } \Delta \geq 0$$

$$D^2 - 4Df' \geq 0 \quad \Leftrightarrow$$

$$D \geq 4f'$$

R<sub>f</sub> Il existe 1 seule solution si  $D = 4f'$   
 2 solutions si  $D > 4f'$   
 0 solution si  $D < 4f'$

2  $P_1'$  et  $P_2'$  les 2 solutions dans le cas  $D > 4f'$ .

$$P_{1,2}' = \frac{+D \pm \sqrt{\Delta}}{2} = \frac{D}{2} \pm \frac{1}{2} \sqrt{D^2 - 4Df'}$$

$$d^2 = P_2' - P_1' = \sqrt{D^2 - 4Df'}$$

$$f' = \frac{D^2 - d^2}{4D}$$

3 A.N.  $f' = 8 \text{ cm}$