

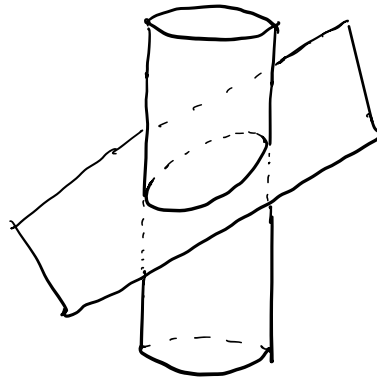
1. Classify the following plane isometry. Determine the translation vector (for translation), center (for rotation), axis and translation vector (for glide reflection).

$$(1) \quad \begin{cases} x' = \frac{1}{2}x - \frac{\sqrt{3}}{2}y + 3 \\ y' = \frac{\sqrt{3}}{2}x + \frac{1}{2}y - 1 \end{cases}$$

$$(2) \quad \begin{cases} x' = \frac{12}{13}x + \frac{5}{13}y - 1 \\ y' = \frac{5}{13}x - \frac{12}{13}y + 5. \end{cases}$$

$$(3) \quad \begin{cases} x' = \frac{4}{5}x - \frac{3}{5}y + 2 \\ y' = -\frac{3}{5}x - \frac{4}{5}y + 2 \end{cases}$$

2. Show that a plane section of a circular cylinder is an ellipse.



3. Show that the locus of points P that have the same distance from a given circle and a given line are parabola.
(use the definition of parabola, find the focus / directrix)

