

# Plane sections of solids

## Plane sections of prisms

- 1) The first point (vertex) of the section is constructed as the intersection of one lateral edge of the prism with the section plane.
- 2) To construct remaining section points we use the affinity between the section and the lower base:

*The axis of affinity* = a line of intersection of the plane of the base with the section plane

*A pair of corresponding points* = one point (vertex) of the base and one point of the section on a corresponding lateral edge

## Plane sections of pyramids

- 1) The first point (vertex) of the section is constructed as the intersection of one side edge of the pyramid and the section plane.
- 2) To construct remaining section points we use the collineation between the section and the lower base:

*The axis of collineation* = a line of intersection of the plane of the base with the section plane

*The center of collineation* = the apex of a pyramid

*A pair of corresponding points* = one point (vertex) of the base and one point of the section on a corresponding lateral edge

## The plane section of the cylinder

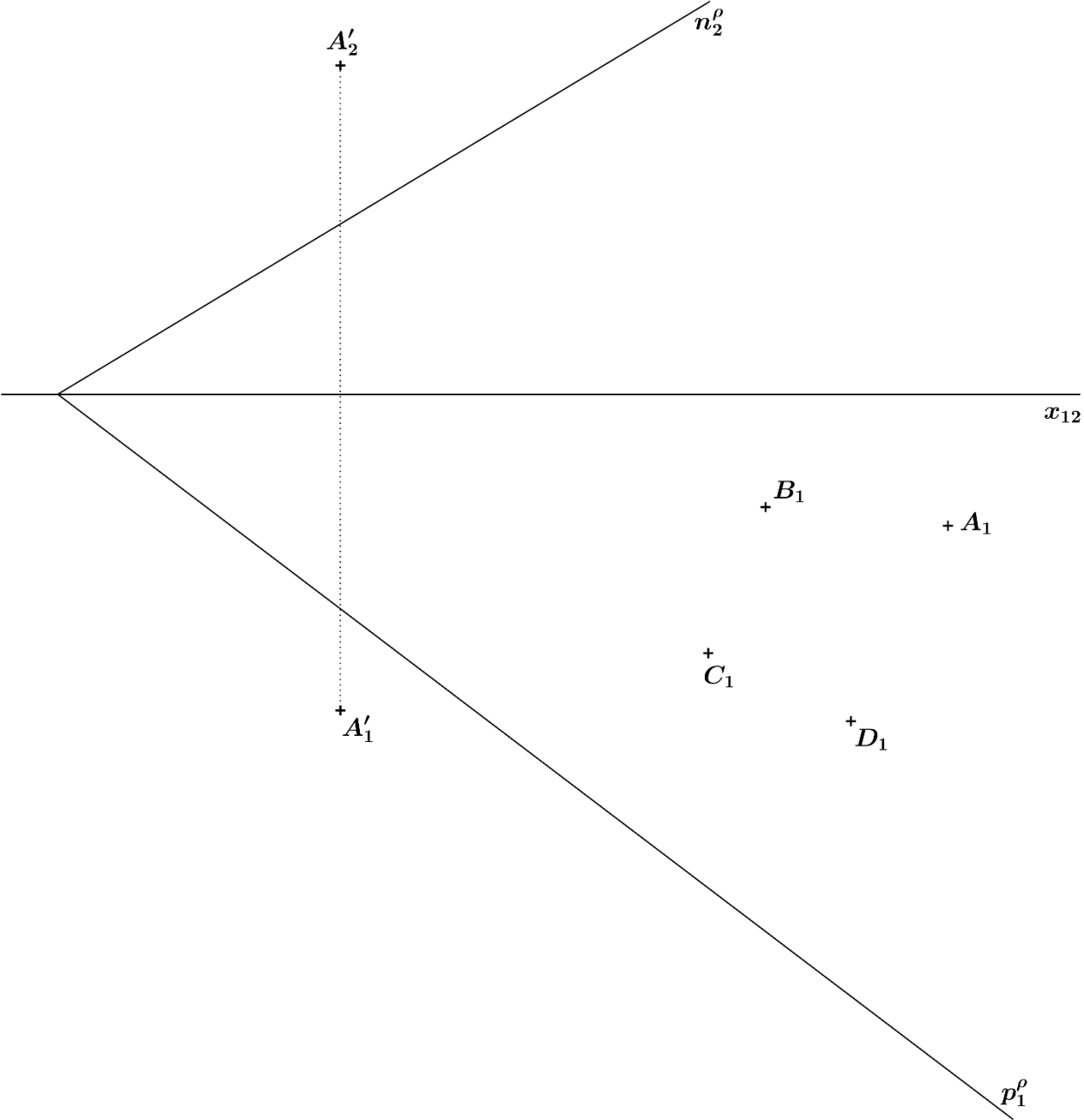
- 1) The center of the section is constructed as the intersection of the axis  $o$  of the cylinder and the section plane.
- 2) To construct the section (the ellipse) we use the affinity:

*The axis of affinity* = a line of intersection of the plane of the base with the section plane

*A pair of corresponding points* = the center of the base and the center of the section curve

**Remark:** usually a base of solid is in the horizontal projection plane, therefore the axis of affinity or the axis of collineation is a line of intersection of the section plane with the horizontal projection plane, i.e., the horizontal trace line of the section plane. A pair of corresponding points is one point (vertex) or a center of the base lying in the horizontal projection plane and one point or a center of the section.

Construct a section of an oblique prism  $ABCA'B'C'D'$  through a plane  $\rho$ . The lower base  $ABCD$  of the prism lies in the horizontal projection plane, a point  $A'$  is one point of the upper base.



Construct a section of an oblique pyramid  $ABCDV$  through a plane  $\rho$ . The base  $ABCD$  of the pyramid lies in the horizontal projection plane, a point  $V$  is the apex of the pyramid.

