Lecture 2
10 Oct 2022

Monge's projection – continued

1. Defining lines and planes
2. Lines and planes in the projecting position
3. Line intersection
4. Piercing of a plane by a line

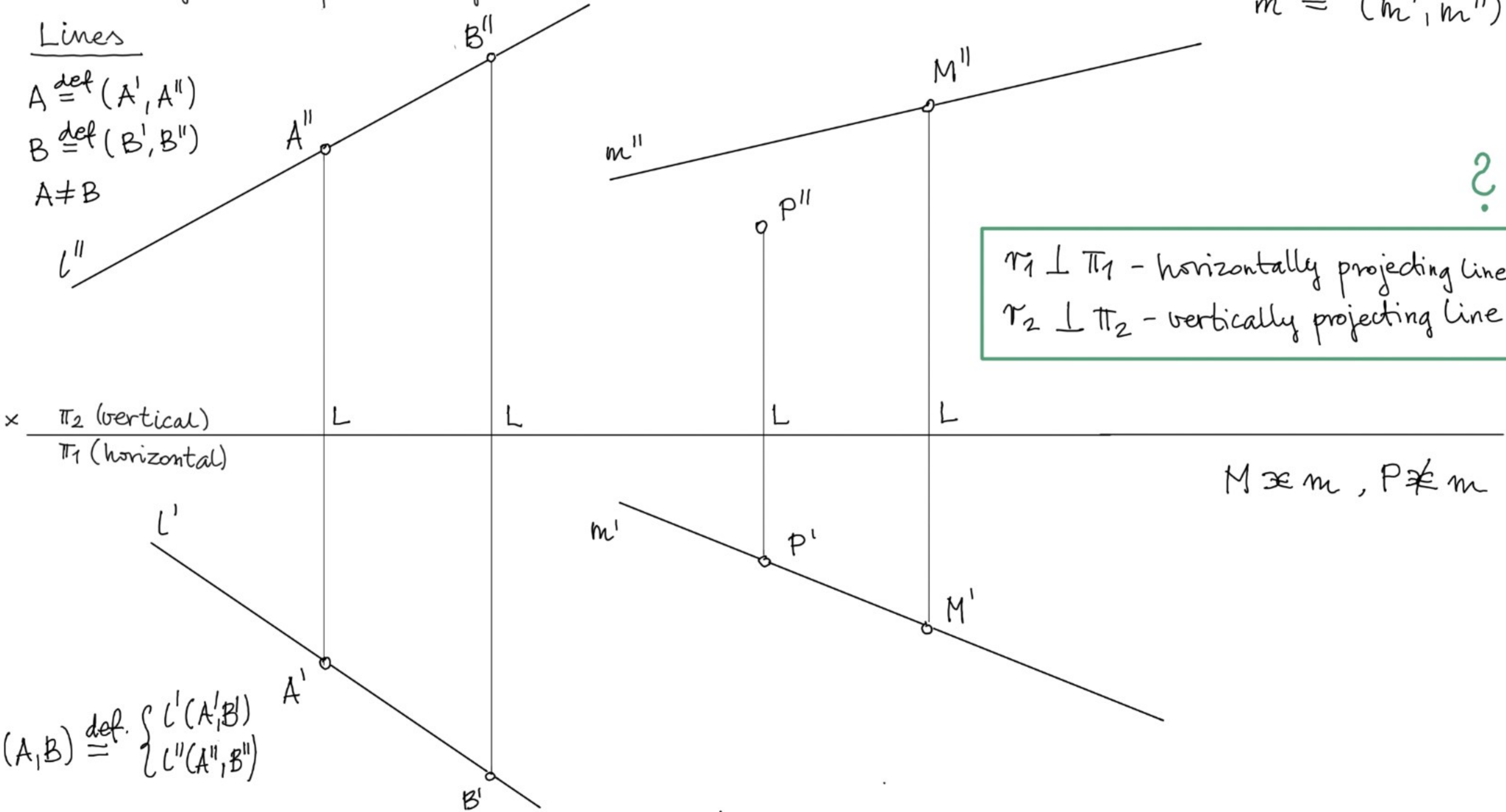
Lines

$A \overset{def}{=} (A', A'')$

$B \overset{def}{=} (B', B'')$

$A \neq B$

$m \overset{def.}{=} (m', m'')$



¿

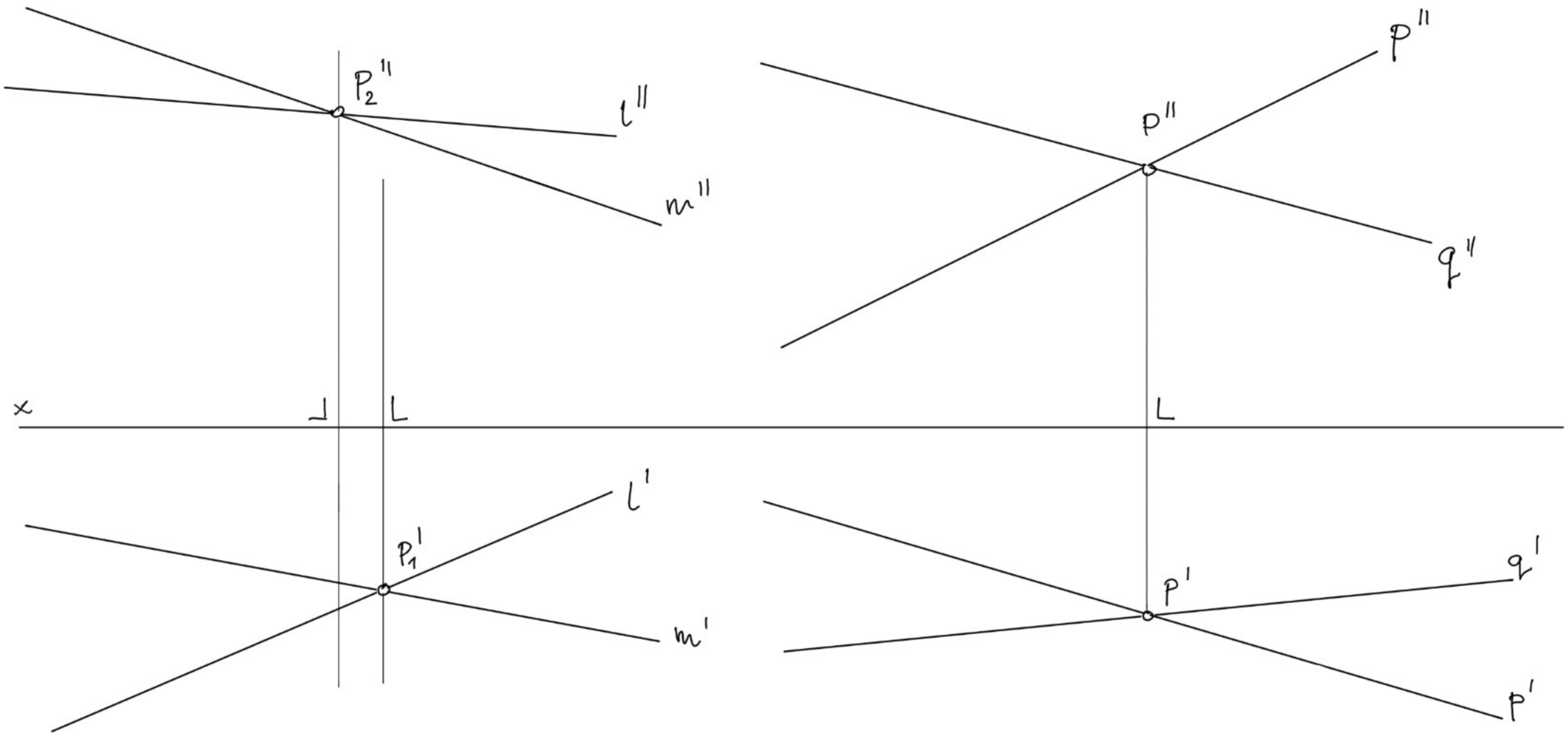
$r_1 \perp \pi_1$ – horizontally projecting line

$r_2 \perp \pi_2$ – vertically projecting line

$M \in m$, $P \notin m$

$l(A,B) \overset{def.}{=} \begin{cases} l'(A', B') \\ l''(A'', B'') \end{cases}$

Line intersection



$P_1 \overset{?}{\doteq} P_2$ – No!

There is no reference line between P_1' and P_2''

$$\left.\begin{array}{l} P' \in p' \wedge P' \in q' \\ P'' \in p'' \wedge P'' \in q'' \end{array}\right\} \quad P \in p \wedge P \in q$$

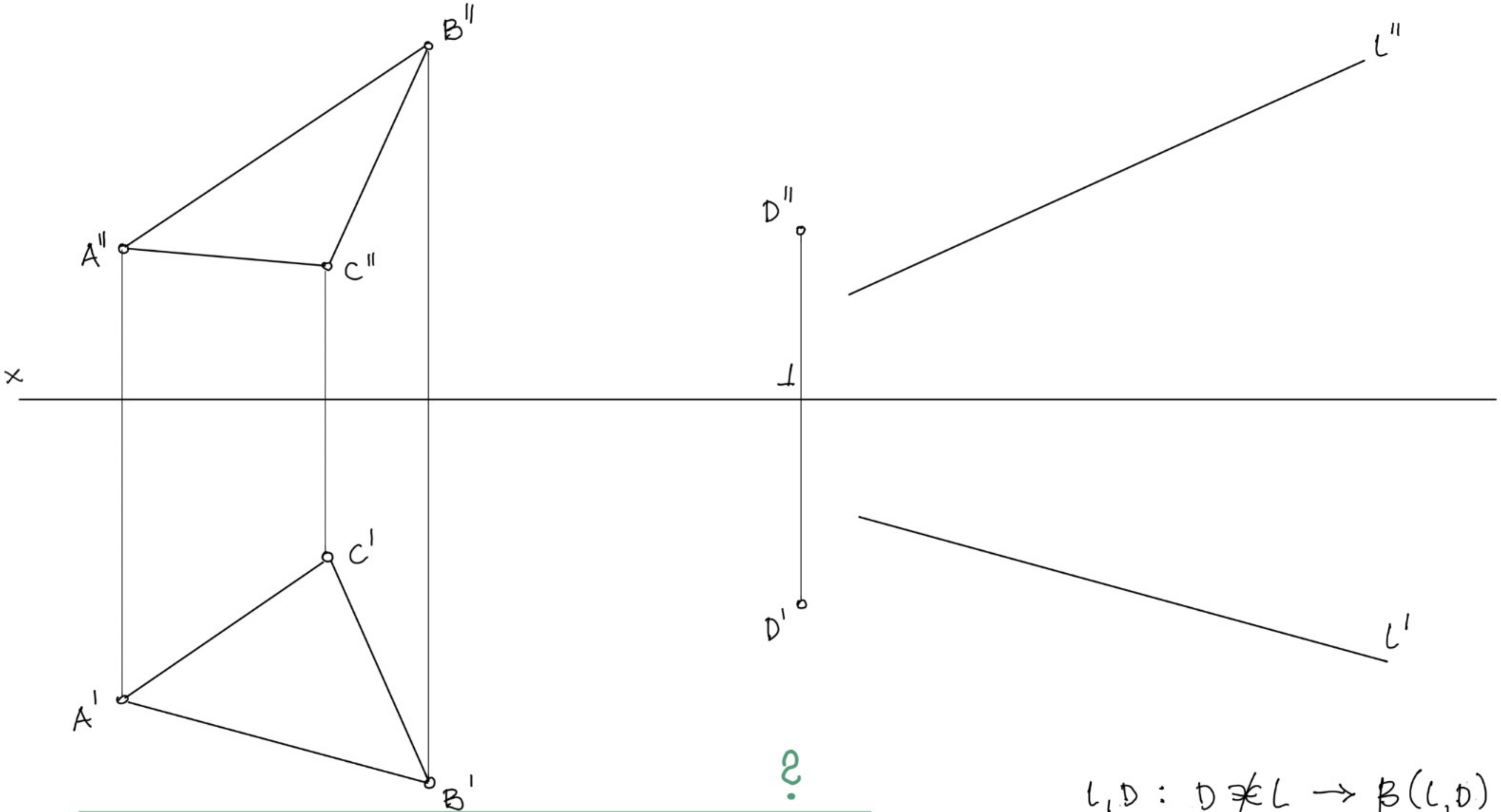
$$P = p \cap q$$

Planes

$A \neq B \neq C \rightarrow \alpha(A,B,C)$

A, B, C – not colinear !

$\{A,B,C\} \in \alpha \overset{def}{\Leftrightarrow} \{A',B',C'\} \in \alpha' \wedge \{A'',B'',C''\} \in \alpha''$



?

$\gamma_1 \perp \pi_1$, $\gamma_1 \parallel \pi_2$ – γ_1 in horiz. proj. pos.

$\gamma_2 \parallel \pi_1$, $\gamma_2 \perp \pi_2$ – γ_2 -"- vert. -"- -"-

$l, D : D \notin l \rightarrow \beta(l,D)$

Find $m(D,E)$, where $E \in l$. ?

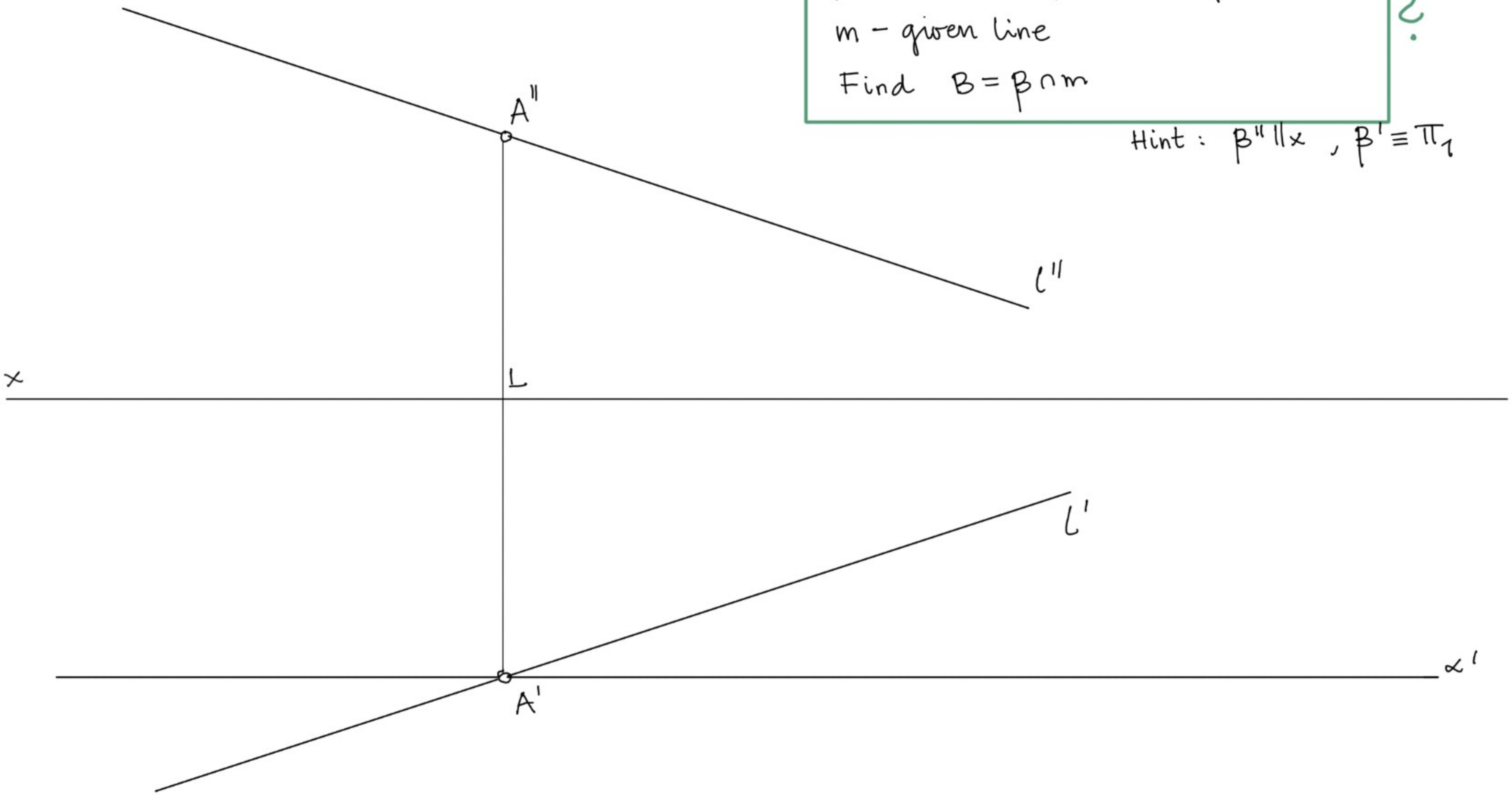
Piercing of a plane in the projecting position

α – horizontally projecting position $\rightarrow$ $\alpha \parallel \pi_2$, $\alpha' \parallel x$, $\alpha'' \equiv \pi_2$ $\qquad A = \alpha \cap l$

β – vertically projecting position
m – given line
Find $B = \beta \cap m$

?

Hint: $\beta'' \parallel x$, $\beta' \equiv \pi_1$



Self-study problems

1. Find the side view for each case.

2. Given a line, find the points at which it pierces the projecting planes. Then, mark the visibility of the given line.
   Hint: Note, that $x = \pi_1'' = \pi_2'$.

3. Parts of the lecture marked ?