# Formation et Analyse d'Images

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## Two lines make a point, two points make a line

Given two points $\vec{P} = \begin{pmatrix} x \\ y \\ 1 \end{pmatrix}$ and $\vec{Q} = \begin{pmatrix} u \\ v \\ 1 \end{pmatrix}$

and two lines $\vec{L} = (a\ b\ c)$ and $\vec{M} = (d\ e\ f)$

1) Two lines make a point. $\vec{P} = \vec{L} \times \vec{M}$

a) Use the cross product to derive the formula for the coefficients for the point $\vec{P}$ at the intersection of two lines $\vec{L}, \vec{M}$

b) Derive the formula for the same coefficients using the determinant.

2) Two points make a line $L^T = \vec{P} \times \vec{Q}$

a) Use the cross product to derive the formula for the coefficients for the line $L^T$ passing through two points $\vec{P}, \vec{Q}$

b) Derive the formula for the same coefficients using the determinant. .