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S4-Linear Applications matrices and linear systems

Linear Algebra

Ingeniería del Software-Universidad de Oviedo

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Classes-13 November 2020

Review: From continuous to discrete least squares

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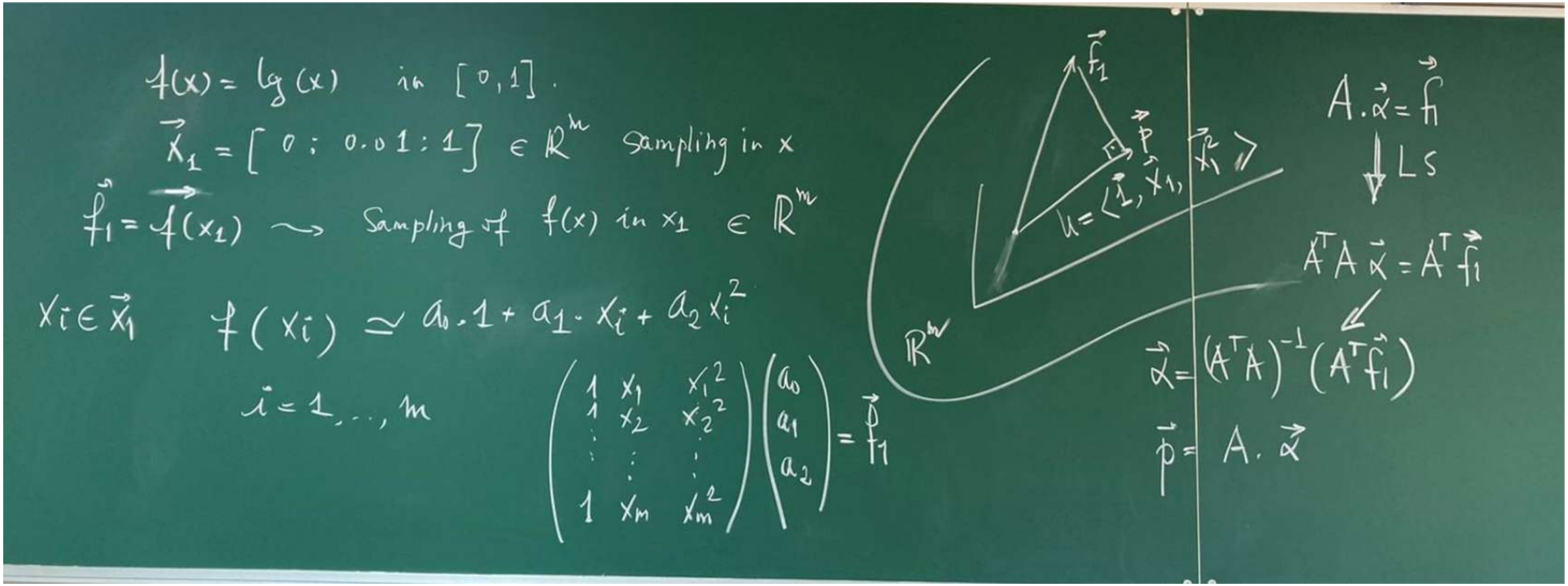

From continuous to discrete least squares

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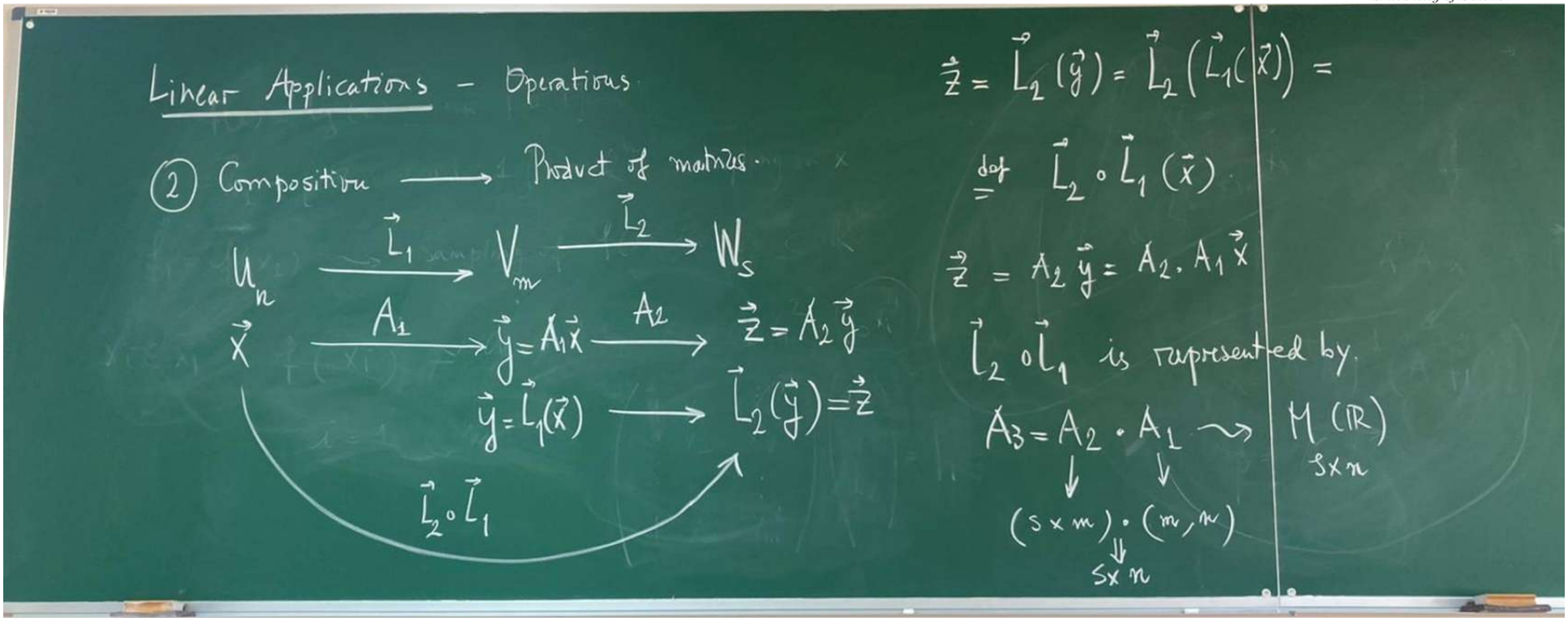
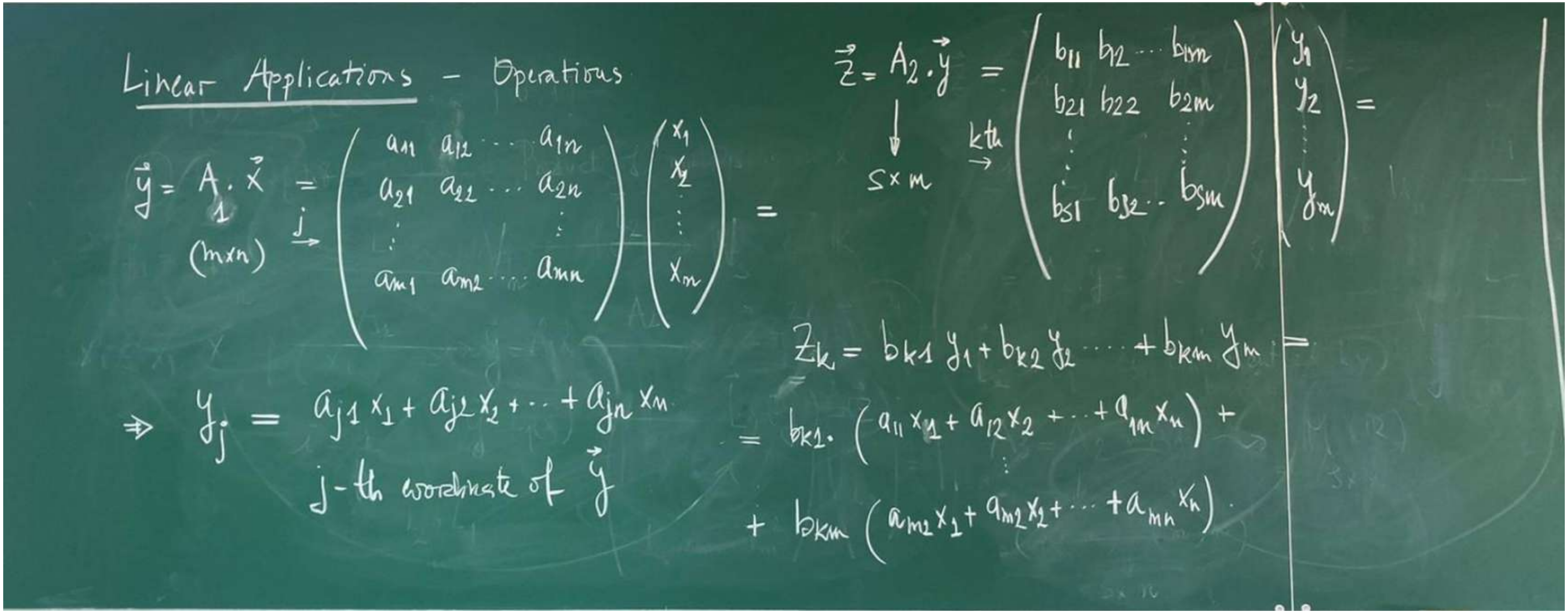
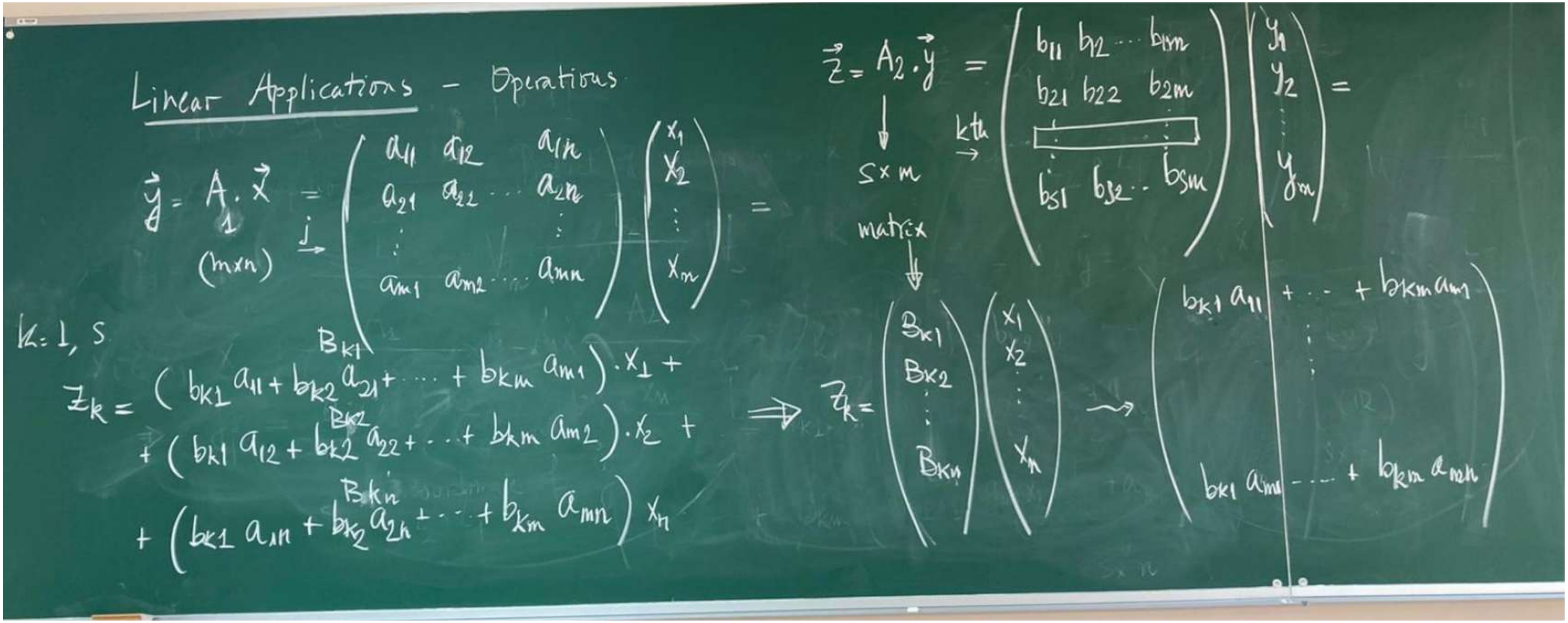



Linear Applications - Operations
$\vec{y} = A \cdot \vec{x} = \begin{pmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & & & \vdots \\ a_{m1} & a_{m2} & \cdots & a_{mn} \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \\ \vdots \\ x_n \end{pmatrix} =$
$(m \times n)$
$j \rightarrow$
$\Rightarrow y_j = a_{j1} x_1 + a_{j2} x_2 + \cdots + a_{jn} x_n$
j-th coordinate of $\vec{y}$
$\vec{z} = A_2 \cdot \vec{y} = \begin{pmatrix} b_{11} & b_{12} & \cdots & b_{1m} \\ b_{21} & b_{22} & & b_{2m} \\ \vdots & & & \vdots \\ b_{s1} & b_{s2} & \cdots & b_{sm} \end{pmatrix} \begin{pmatrix} y_1 \\ y_2 \\ \vdots \\ y_m \end{pmatrix} =$
$s \times m$
$k\text{th} \rightarrow$
$z_k = b_{k1} y_1 + b_{k2} y_2 \cdots + b_{km} y_m =$
$= b_{k1} \cdot (a_{11} x_1 + a_{12} x_2 + \cdots + a_{1n} x_n) +$
$+ b_{km} (a_{m1} x_1 + a_{m2} x_2 + \cdots + a_{mn} x_n)$

Linear Applications



Linear Applications

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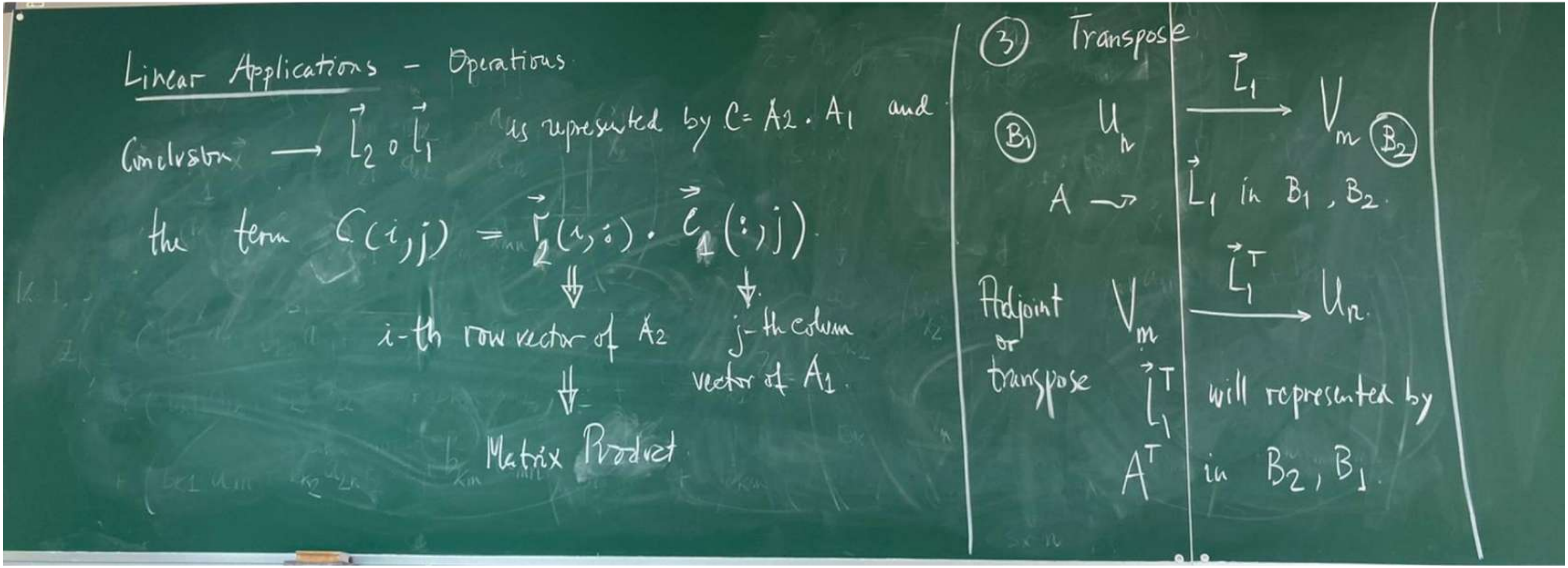

Linear Applications

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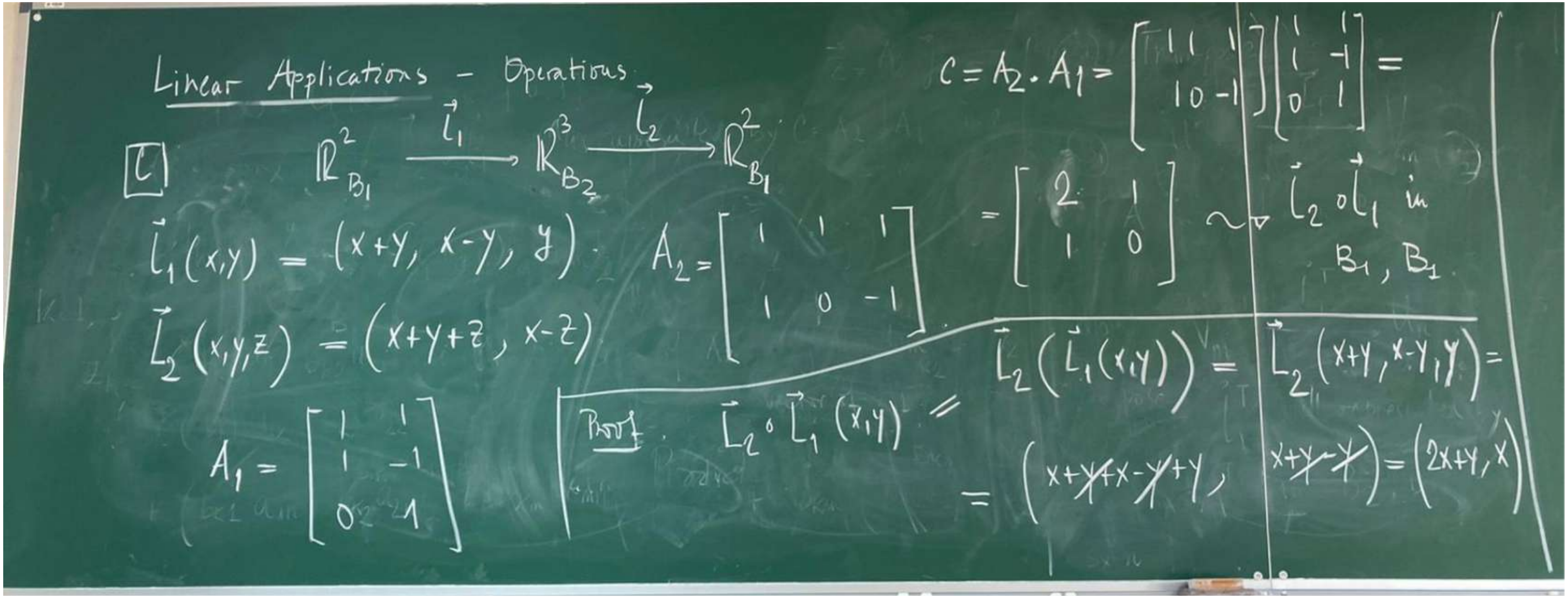

Linear Applications

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