

EXAMPLES!

MA2071
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COORDINATE VECTORS

<u>Vector Space</u>	<u>Basis B</u>	<u>$\bar{x}$</u>	<u>$[\bar{x}]_B$</u>
$V = \mathbb{R}^4$	$B = \{\bar{e}_1, \bar{e}_2, \bar{e}_3, \bar{e}_4\}$	$\begin{bmatrix} 2 \\ 3 \\ 5 \\ 7 \end{bmatrix}$	$\begin{bmatrix} 2 \\ 3 \\ 5 \\ 7 \end{bmatrix}$

$V = \mathbb{R}^4$	$B = \left\{ \begin{bmatrix} 2 \\ 0 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 3 \\ 3 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 3 \\ 1 \\ -4 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 1 \\ 7 \end{bmatrix} \right\}$	$\bar{x} = \begin{bmatrix} 2 \\ 3 \\ 5 \\ 7 \end{bmatrix}$	$[\bar{x}]_B = \begin{bmatrix} 1 \\ 1 \\ -1 \\ 1 \end{bmatrix}$
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$V = M_{2 \times 2}$	$B = \left\{ \begin{bmatrix} 1 & 0 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}, \begin{bmatrix} 0 & 0 \\ 1 & 0 \end{bmatrix}, \begin{bmatrix} 0 & 0 \\ 0 & 1 \end{bmatrix} \right\}$	$\bar{x} = \begin{bmatrix} 2 & 3 \\ 5 & 7 \end{bmatrix}$	$[\bar{x}]_B = \begin{bmatrix} 2 \\ 3 \\ 5 \\ 7 \end{bmatrix}$
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$V = M_{2 \times 2}$	$B = \left\{ \begin{bmatrix} 1 & 0 \\ 1 & 0 \end{bmatrix}, \begin{bmatrix} 0 & 1 \\ 0 & 3 \end{bmatrix}, \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}, \begin{bmatrix} 0 & 0 \\ -1 & 0 \end{bmatrix} \right\}$	$\bar{x} = \begin{bmatrix} 2 & 3 \\ 5 & 7 \end{bmatrix}$	$[\bar{x}]_B = \begin{bmatrix} 4 \\ 3 \\ -2 \\ -1 \end{bmatrix}$
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$V = \mathbb{P}_3$	$B = \{1, t, t^2, t^3\}$	$\bar{x} = 5 - t + t^2$	$[\bar{x}]_B = \begin{bmatrix} 5 \\ -1 \\ 1 \\ 0 \end{bmatrix}$
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$V = \mathbb{P}_3$	$B = \{t^3, t^2, t, 1\}$	$\bar{x} = 5 - t + t^2$	$[\bar{x}]_B = \begin{bmatrix} 0 \\ 1 \\ -1 \\ 5 \end{bmatrix}$
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$V = \mathbb{P}_3$	$B = \{1, t-2, (t-2)^2, (t-2)^3\}$	$\bar{x} = t^2 - 7t$	$[\bar{x}]_B = \begin{bmatrix} -10 \\ -3 \\ 1 \\ 0 \end{bmatrix}$
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