

Given the bases

up

$$A = \left\{ \begin{bmatrix} 1 \\ 1 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ 0 \\ 2 \\ -1 \end{bmatrix}, \begin{bmatrix} 1 \\ -1 \\ -1 \\ 2 \end{bmatrix} \right\}$$

and

$$B = \left\{ \begin{bmatrix} 2 \\ 0 \\ -1 \\ 2 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 3 \\ -3 \end{bmatrix}, \begin{bmatrix} 3 \\ 1 \\ 4 \\ -2 \end{bmatrix} \right\}$$

for a vector space  $V$  and vector

$$\mathbf{x} = \begin{bmatrix} 5 \\ 2 \\ 6 \\ -3 \end{bmatrix} \text{ in } V.$$

a) Find matrix  $P_{A \leftarrow B}$

b) Find matrix  $P_{B \leftarrow A}$

Given the bases

$$A = \left\{ \begin{bmatrix} 1 \\ 2 \end{bmatrix}, \begin{bmatrix} -2 \\ -3 \end{bmatrix} \right\} \quad \text{and}$$

$$B = \left\{ \begin{bmatrix} 2 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 3 \end{bmatrix} \right\} \quad \text{for a}$$

vector space  $V$ ,

a) find matrix  $P_{A \leftarrow B}$

b) find matrix  $P_{B \leftarrow A}$

c) show that matrices  $P_{A \leftarrow B}$  and

$P_{B \leftarrow A}$  are inverse of each other.