

$$\begin{aligned}
 &> \text{restart: with(LinearAlgebra):} \\
 &> A := \text{Matrix}([ [2, 3], [1, 0] ]) \\
 &A := \begin{bmatrix} 2 & 3 \\ 1 & 0 \end{bmatrix} \tag{1}
 \end{aligned}$$

$$\begin{aligned}
 &> J, Q := \text{JordanForm}(A, \text{output} = ['J', 'Q']) \\
 &J, Q := \begin{bmatrix} -1 & 0 \\ 0 & 3 \end{bmatrix}, \begin{bmatrix} \frac{1}{4} & \frac{3}{4} \\ -\frac{1}{4} & \frac{1}{4} \end{bmatrix} \tag{2}
 \end{aligned}$$

$$\begin{aligned}
 &> \# \text{ Dit is i) } \lambda_1 = -1, \lambda_2 = 3 \\
 &> \# \text{ ii)} \\
 &> v_1 := Q[ \dots, 1 ] \\
 &v_1 := \begin{bmatrix} \frac{1}{4} \\ -\frac{1}{4} \end{bmatrix} \tag{3}
 \end{aligned}$$

$$\begin{aligned}
 &> v_2 := Q[ \dots, 2 ] \\
 &v_2 := \begin{bmatrix} \frac{3}{4} \\ \frac{1}{4} \end{bmatrix} \tag{4}
 \end{aligned}$$

$$\begin{aligned}
 &> v_3 := \text{Vector}([1, 2]) \\
 &v_3 := \begin{bmatrix} 1 \\ 2 \end{bmatrix} \tag{5}
 \end{aligned}$$

$$\begin{aligned}
 &> eq := \langle 1, 2 \rangle = c_1 * v_1 + c_2 * v_2; \\
 &eq := \begin{bmatrix} 1 \\ 2 \end{bmatrix} = \begin{bmatrix} \frac{c_1}{4} + \frac{3c_2}{4} \\ -\frac{c_1}{4} + \frac{c_2}{4} \end{bmatrix} \tag{6}
 \end{aligned}$$

$$\begin{aligned}
 &> \text{solve}(eq, \{c_1, c_2\}) \\
 &\{c_1 = -5, c_2 = 3\} \tag{7}
 \end{aligned}$$

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