

## Risultati Laboratorio 4

### Esercizio 4.1

$$u'(t) = \begin{bmatrix} -4 & -2 \\ 3 & 1 \end{bmatrix} u(t), \quad u(0) = \begin{bmatrix} 0 \\ -1 \end{bmatrix} \quad t \in [0, 2], \quad \text{Sol : } u(t) = \begin{bmatrix} 2e^{-t} - 2e^{-2t} \\ -3e^{-t} + 2e^{-2t} \end{bmatrix}$$

### Eulero Implicito

N	$\  u(\mathbf{T}) - U_N(\mathbf{T}) \ _\infty$	$\  U_N(\mathbf{T}) - U_{2N}(\mathbf{T}) \ _\infty$
50	0.0101208	
100	0.00512425	0.0050
200	0.00257837	0.0025
400	0.00129328	0.0013

### Trapezi

N	$\  u(\mathbf{T}) - U_N(\mathbf{T}) \ _\infty$	$\  U_N(\mathbf{T}) - U_{2N}(\mathbf{T}) \ _\infty$
50	3.01414 e-005	
100	7.53162 e-006	2.2610 e-005
200	1.88267 e-006	5.6489 e-006
400	4.70653 e-007	1.4120 e-006