1 Magnus expansion for A, B constant and deterministic

We will concern ourselves with the following SDE:

$$dX_t = BX_t dt + AX_t dW_t$$

with

$$A = \begin{bmatrix} 0.335302 & -0.645492 \\ -0.264419 & 0.634641 \end{bmatrix}$$

and

$$B = \begin{bmatrix} -0.0572262 & 0.0493763 \\ -0.665366 & 0.742744 \end{bmatrix}$$

The spectral norm of A is 1. and the spectral norm of B is 1.

1.1 Parameters

Parameter	**value**
t_0	0
T	1
`N_fine`	10001
N	101
`M_fine`	1000
M	1000
d	2

1.2 Computational Times

Method	Log	Matrix Exp	Total
	Run 1		
euler	0	0	6.81937
m2	0.0223175	0.530572	0.55289
	Run 2		
euler	0	0	7.07149
m2	0.0225028	0.541272	0.563774
	Run 3		
euler	0	0	6.82343
m2	0.0221759	0.569511	0.591687
	Mean Time		
euler	0	0	6.90476
m2	0.0223321	0.547118	0.56945