**Term Test Bb version 2**

**(1)** [5 points] Consider the following function:

$$f\left(\begin{bmatrix} x \\ y \end{bmatrix}\right) = \begin{bmatrix} x^2 + x\sin(x+y) \\ \sin x \cos(x+y) \end{bmatrix} \tag{1}$$

Linearize the function around $x = 1, y = 2$ so it looks as follows,

$$f(x) \approx E + \begin{bmatrix} A & B \\ C & D \end{bmatrix} \begin{bmatrix} x - M \\ x - N \end{bmatrix} \tag{2}$$

Specify the numbers $A, B, C, D, E, M, N$ in your solution.