

1.  
c)

$$x' = 2x - y$$

$$y' = x + 2y$$

$$\frac{\partial x'}{\partial x} = 2$$

$$\frac{\partial x'}{\partial y} = -1$$

$$\frac{\partial y'}{\partial x} = 1$$

$$\frac{\partial y'}{\partial y} = 2$$

$$M = \begin{pmatrix} 2 & -1 \\ 1 & 2 \end{pmatrix}$$