2

$$f(x) = \begin{bmatrix} x_1 + 2x_2 - 2 \\ x_1^2 + 4x_2^2 - 4 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

$$J_f(x) = \begin{bmatrix} 1 & 2 \\ 2x_1 & 8x_2 \end{bmatrix}$$

$$x_0 = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$$

$$f(x_0) = \begin{bmatrix} 1 + 2 \cdot 2 - 2 \\ 1^2 + 4 \cdot 2^2 - 4 \end{bmatrix} = \begin{bmatrix} 3 \\ 13 \end{bmatrix}$$

$$J_f(x_0) = \begin{bmatrix} 1 & 2 \\ 2 \cdot 1 & 8 \cdot 2 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 2 & 16 \end{bmatrix}$$

W/ JACOBEAN, ONE DOES NOT... I JUST NEED MORE PEOPLE RUNNING MY

$$f(x) = \begin{bmatrix} x^2 + y^2 \\ x^2 - y^2 \end{bmatrix} = \begin{bmatrix} 4 \\ 1 \end{bmatrix}$$

$$J_f(x) = \begin{bmatrix} 2x & 2y \\ 2x & -2y \end{bmatrix}$$

$$x_0 = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$

$$\longrightarrow f(x_0) = \begin{bmatrix} 1^2 + 1^2 \\ 1^2 - 1^2 \end{bmatrix} = \begin{bmatrix} 2 \\ 0 \end{bmatrix}$$

$$J_f(x) = \begin{bmatrix} 2 \cdot 1 & 2 \cdot 1 \\ 2 \cdot 1 & -2 \cdot 1 \end{bmatrix} = \begin{bmatrix} 2 & 2 \\ 2 & -2 \end{bmatrix}$$