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EX.2.7.2.b, Sauer3

Use the Taylor expansion to find the linear approximation L(x) to F(x) near x_0 .

(b)
$$\begin{pmatrix} F: & \mathbb{R}^2 & \to & \mathbb{R}^2 \\ & \begin{pmatrix} u \\ v \end{pmatrix} & \mapsto & \begin{pmatrix} u+e^{u-v} \\ 2u+v \end{pmatrix} \end{pmatrix}$$
 at $x_0 = \begin{pmatrix} 1 \\ 1 \end{pmatrix}$