

**EX.2.7.2.a, Sauer3**

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

$$(b) \left( F : \begin{array}{c} \mathbb{R}^2 \\ \left( \begin{array}{c} u \\ v \end{array} \right) \end{array} \rightarrow \begin{array}{c} \mathbb{R}^2 \\ \left( \begin{array}{c} 1 + e^{u+2v} \\ \sin(u+v) \end{array} \right) \end{array} \right) \quad \text{at } x_0 = \left( \begin{array}{c} 0 \\ 0 \end{array} \right)$$