(1) Let \( f : \mathbb{R}^3 \to \mathbb{R} \) be given by \( f(x, y, z) = \sin(xyz) + e^{2x+y(z-1)} \). show that the level set \( \{ f = 1 \} \) can be solved as \( x = x(y, z) \) near \((0, 0, 0)\) and compute \( \frac{\partial x}{\partial y}(0, 0) \) and \( \frac{\partial x}{\partial z}(0, 0) \)

(2) let \( f : \mathbb{R}^3 \to \mathbb{R}^2 \) be given by \( f_1(x, y, z) = \sin(x + y) - x + 2z, \)
\( f_2(x, y, z) = y + \sin z \) Show that the level set \( \{ f_1 = 0, f_2 = 0 \} \) can be solved near \((0, 0, 0)\) as \( y = y(x), z = z(x) \) and compute \( \frac{\partial y}{\partial x}(0) \) and \( \frac{\partial z}{\partial x}(0) \)

**Extra Credit:** Let \( U \subset \mathbb{R}^n \) be open and \( f : U \to \mathbb{R}^m \) be \( C^1 \) where \( m < n \).

Prove that \( f \) can not be 1-1 on \( U \).