1. Compute the first order partial derivatives \( \frac{\partial}{\partial x}, \frac{\partial}{\partial y} \) and \( \frac{\partial}{\partial z} \) of the following functions:

   (a) \( f(x, y, z) = 3y \sin x + x^5 y^3 + z \)
   (b) \( g(x, y, z) = \frac{x}{z} + 7e^{xyz} + \ln(x + y^2 z) \)

2. Compute the second order partial derivatives \( \frac{\partial^2}{\partial x^2}, \frac{\partial^2}{\partial y^2}, \frac{\partial^2}{\partial x \partial y} \) and \( \frac{\partial^2}{\partial y \partial x} \) of the following functions:

   (a) \( f(x, y) = xy^4 \)
   (b) \( f(x, y) = xy + \sin(x + y) \)