1. Find the directional derivative of the function \( f(x, y, z) = xy^2z^3 \) at the point \((2, 1, 1)\) in the direction \(\langle 2, -1, -1 \rangle\).

2. Find the maximum rate of change of \( f(x, y) = x^2 + y^3 \) at the point \((2, 1)\) and the direction in which it occurs.