Partial Derivatives/Gradient Exercises

① Let $f(x, y) = xy^2 + \cos(xy)$

Compute $\dfrac{\partial f}{\partial x}$, $\dfrac{\partial f}{\partial y}$

② Let $f(x, y, z) = x^2 e^{xz} y$

Compute $\dfrac{\partial f}{\partial x}$, $\dfrac{\partial f}{\partial y}$, $\dfrac{\partial f}{\partial z}$

③ Let $f(x_1, x_0) = x_1 + e^{x_1 x_2}$

Compute $\dfrac{\partial f}{\partial x_1}$, $\dfrac{\partial f}{\partial x_2}$

④ Let $f(x, y) = x^2 y + 2x \cos(y)$

Comput ∇f

⑤ Let $f(x, y, z) = x^2 yz + z e^{xy}$

Compute ∇f