1. Find the partial derivatives, $f_x(x, y)$ and $f_y(x, y)$, if $f(x, y) = y^2 e^y$.

2. Find the second-order partials, $f_{xx}$, $f_{xy}$, $f_{yx}$, and $f_{yy}$, if $f(x, y) = x^3 + x^2 y^2 + y^4$. 