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1. Let $f(x, y) = x^4y - 2x^3y^2$. Find all second partial derivatives.

2. Use implicit differentiation to find $\frac{\partial z}{\partial y}$ where $2x^3 - 3y^2 + 4z^4 = 10$.

3. Let $f(x, y) = \frac{x}{y^2}$. Find the tangent plane on f at the point $P(-4, 2)$