Calculus 10C, Winter 2015, Lecture B, Midterm 2

Fifty minutes, three problems. No calculators allowed.

Please start each problem on a new page.

You will get full credit only if you show all your work clearly.

Simplify answers if you can, but don't worry if you can't!

1. Let $f(x, y) = xy \sin x$. Compute the equation of the tangent plane to the surface defined by f at the point where $(x, y) = (\frac{\pi}{2}, 5)$.

2. Let $f(x, y) = x^2y^3$. What are the values of f, f_x and f_y at $(1, 2)$? Use these to approximate the value of $f(1.1, 1.9)$.

3. Let $f(x, y) = (x - 2y)^2$. Compute the directional derivative of f, at the point $(3, 1)$, in the direction of the point $(4, 3)$.

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