Quiz 4 — MA261 — July 7, 2017

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1. (4 points) Find and classify the critical point of the function $f(x, y) = y^2 - 4y + 2x - x^2$ using the second derivatives test.

2. (8 points) Find the (x, y) coördinates of the extreme value of $f(x, y) = e^{xy}$ subject to the constraint $x^3 + y^3 = 16$ using the method of Lagrange multipliers.

3. (8 points) Set up **but do not evaluate** an iterated integral to compute $\iint_D y^2 \, dA$ where D is the triangular region with vertices $(0, 1), (1, 2), (4, 1)$.