

NAME:

Math 2401 (K1-K3)
3/2/2015

Quiz 6 - Take-home

Instructions: You will have to turn in the completed quiz in recitation, Wednesday 3/4/2015. You are allowed to collaborate with one another, but the solutions you turn in must be your own - that is, you cannot copy another student's solution, but must instead write your own.

Let R be the region in the x, y -plane given by the square with vertices $(0, 0)$, $(\pi/2, \pi/2)$, $(\pi/2, -\pi/2)$, and $(\pi, 0)$. Consider the transformation:

$$u = x + y; \quad v = x - y.$$

- Find and sketch the region G in the u, v -plane corresponding to R under the transformation above.
- Find the inverse transformation (i.e. find x, y in terms of u, v).
- Find the Jacobian of this transformation.
- Use this transformation to compute:

$$\iint_R (x - y) \sin(x + y) \, dA.$$