KFUPM
Department of Mathematics and Statistics

MATH 302-4

Quiz 6, Term 101 Saturday January 1, 2011

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Exercise 1. Let $f(z) = u(x, y) + iv(x, y)$ be a complex function defined on $\mathbb{C}$ and satisfying Cauchy Riemann Equations. Suppose that $\mathrm{Re}(f(z)) = v(x, y) = 0$, for all $(x, y) \in \mathbb{R}^2$. Show that there exists $\alpha \in \mathbb{R}$ such that $f(z) = \alpha$, for each $z \in \mathbb{C}$.

Exercise 2. Let $f(z)$ be the complex function defined by $f(z) = e^{2x}(\cos(2y) + i\sin(2y))$, for $z = x + iy$. Show that f satisfies Cauchy Riemann Equations and that $f'(z) = f(z)$.