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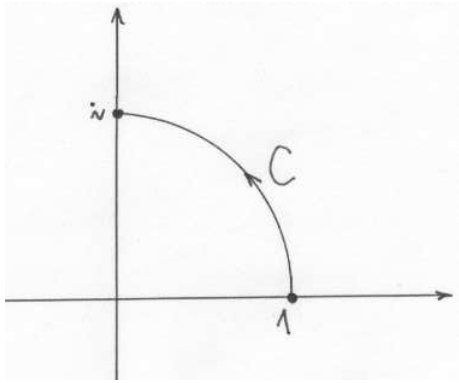
MATH 4103 Quiz 8 Spring 2016

Name: _____

Problem. [1+1+1 points]

Let the contour C in $\mathbb{C}$ be given by the equation $z = Z(t) = e^{it}$, where t varies from 0 to $\frac{\pi}{2}$. Let $f(z) = z^2$.



(a) Show that $f(z)$ is analytic (just tell me what its derivative is), and use this fact to find $\int_C f(z)\,\mathrm{d}z$.

(b) Find $f(Z(t))$ and $Z'(t)$.

(c) Use your result from part (b) to compute $\int_C f(z)\,\mathrm{d}z$ directly from the definition of a contour integral.