

Name: \_\_\_\_\_

Math 434 Complex Variables – Crawford

Quiz 2  
08 April 2015

Books, notes (in any form), and calculators are not allowed. *Show all your work and simplify your answers.* Good Luck!

1. (7 pts) Given  $f(z) = \begin{cases} -2 & \text{when } x < 0 \\ 3y & \text{when } x > 0 \end{cases}$

and  $C$  is the contour from  $z = -1 + i$  to  $z = 1 + i$  along the curve  $y = x^2$ , evaluate the integral  $\int_C f(z) dz$ .

2. (7 pts) Evaluate the integral  $\int_C \frac{z^3}{\bar{z}} dz$

where  $C$  is the semicircle  $z = 2e^{i\theta}$  ( $0 \leq \theta \leq \pi$ )

3. (6 pts) If  $C$  is a circle of radius 3 centered at the origin with positive orientation, which of the following integrals are guaranteed to equal 0 by the Cauchy-Goursat Theorem?

(a).  $\int_C \frac{z}{z^2 - 16} dz$

(b).  $\int_C \frac{z}{e^z} dz$

(c).  $\int_C \frac{1}{z^2 - 4z + 5} dz$

(d).  $\int_C \text{Log}(z - 3i) dz$