

NAME:

MATH463, Sec. 0101: In-class Quiz # 1

Wednesday, February 18, 2015

Solve the following 2 problems. Justify your answers. Cross out what is not meant to be part of your final answer. Total number of points: 10.

I. (5 pts) Find *all* complex values of

$$(1 - i\sqrt{3})^{2/5}.$$

CONTINUED ON REVERSE

II.(5pts) Consider the function $f(z) = u(x, y) + iv(x, y)$ where

$$u(x, y) = x^2 - y^2 + 2y + x, \quad v(x, y) = 2xy - 2x - y$$

(a)[3 pts] Is $f(z)$ an entire (i.e., analytic everywhere) function? Explain.

(b)[2 pts] Write down explicitly $f(z)$ in terms of z and possibly \bar{z} . **Note:** If $f(z)$ is analytic, it should involve only z and not \bar{z} . If $f(z)$ is not analytic, it should involve both z and \bar{z} .