

## Homework 1 (Due Wed. Jan. 20, 2016)

(1) p. 5 # 2

(2) p. 13 # 4

(3) p. 13 # 5

(4) p. 16 # 7

(5) Simplify  $\text{Arg}((\sqrt{3}-i)^2)$ .

(6) Solve the equation  
 $z^3 = -i$

giving your simplified exact solutions in rectangular coordinates. Exhibit the solutions geometrically.

(7) Under the map

$$w = \frac{1}{z}$$

show that the image of any horizontal line that does not pass thro 0 is a circle minus a point.

Sketch the line and its image.

HINT: Try to get  $u^2 + v^2$  in terms of  $u$  or  $v$ .