

Homework-Assignment 2 Name: _____

Write-up your solution carefully including all the details of the proof. Due Monday September 15.

(1) (5 points)

Let $z = 1 - \sqrt{3}i$. Compute $|z|, \bar{z}, z^{20}$.

(2) (5 points) Solve the equation

$$z^4 = i.$$

(3) (5 points)

Show that if $a \mid m, b \mid m$ and $(a, b) = 1$, then $ab \mid m$.

(4) (5 points)

Let A be a finite set and $f : A \rightarrow A$ an injective function. Prove that f is onto.

(5) (5 points) (for graduate students only) A positive integer is called a square if it is the square of an integer. Prove that if a, b are squares and $(a, b) = 1$, then ab is a square.