

Quiz #1

(1 point) Name: (1 point) SSN:

Do **ONLY** three of the following questions and show your work. If you do more than three, then only the first three will be graded. So, make it clear which questions you want me to grade.

Question 1: (6 points) Prove the following by mathematical induction:

$$1 + 2 + \dots + n = \frac{n(n+1)}{2}, \forall n \in \mathbb{N}.$$

Question 2: (6 points) Prove or disprove:

All prime numbers are even integers.

Question 3: (6 points) Prove that

$$a \longrightarrow b \equiv \bar{b} \longrightarrow \bar{a}$$

Question 4: (6 points) Prove or disprove:

$n^2 - 5n + 6$ is an even integer for every natural number n .