

Name: SSN: Row:

Do **only 4** of the following questions and show your work. Circle **clearly** the questions which you want to be graded. Circle **only 4**.

Question 1: (5 points) Let A be the interval $[-1, 2) \cup (3, 5]$. Find $A \cap \mathbb{Z}$.

Question 2: (5 points) Let $\{a_n\}_{n=1}^{\infty}$ be defined by $a_n = 2^n$, $\forall n \in \mathbb{N}$. Let $S = \{1, 4\}$. Find $\sum_{i \in S} a_{i-1}$.

Question 3: (5 points) Find $\mathcal{P}(\{1, \{1\}\})$.

Question 4: (5 points) Let $X = \{1, 2, 3\}$. Give an example of a binary relation on X which is symmetric and antisymmetric at the same time.

Question 5: (5 points) Let R be the relation on $\mathbb{Z}$ defined by: $a R b$ iff $a - b \leq 4$. Prove by a counter example that R is not symmetric.