

Quiz #1

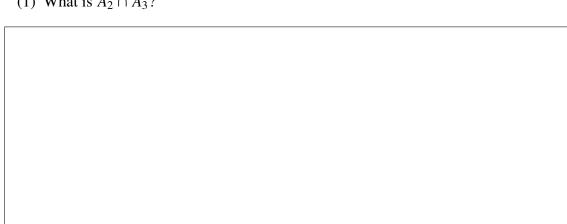
Monday, September 18 2017

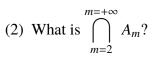
Duration: 20 min
NAME:
Please write clearly and properly. Justify your answers carefully.

Problem	Grade
1	
2	
3	
Total	

Problem 1 (~ 6 points.).
For any integer m , let us
(1) What is $A_2 \cap A_2$?

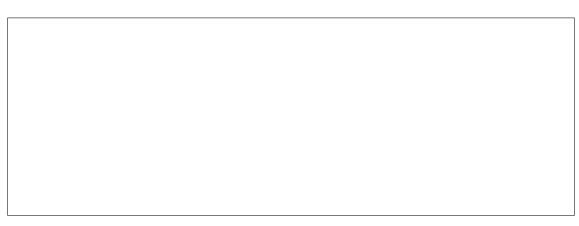
or any integer m, let us define the set $A_m = \{n \in \mathbb{Z} \mid n \text{ is divisible by } m\}$.







(3) What is
$$\bigcup_{m=2}^{m=+\infty} A_m?$$



Consider the function $f\colon \begin{array}{ccc} \mathbb{Z} & \to & \mathbb{Z} \\ x & \mapsto & 2x+1 \ . \end{array}$
Is f injective? Is f surjective? Is f bijective? Can you change the domain and/or codomain of f , so that f becomes bijective?

Problem 2 (∼ 6 points.)**.**

Problem 3 (~ 6 points.).	
Let <i>n</i> be some positive integer. Consider the relation \mathcal{R} on \mathbb{Z} defined by:	
$a\mathcal{R}b \Leftrightarrow (a-b)$ is divisible by n .	
(1) Show that \mathcal{R} is an equivalence relation.	
(2) Consider the partition of \mathbb{Z} relative to this equivalence relation. How many subsedues it consist of?	ets
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