

### MATH230 Discussion Quiz 1

20 minutes, 10 points total, closed note

**Mark the following as true or false (1 point each)**

1: For any non-empty set  $A$ , we have  $\emptyset \in A$ .

2: If  $B$  is a proper subset of  $A$ , then  $0 < |B| < |A|$ .

3: If  $A$  and  $B$  are disjoint, then  $|A \cup B| = |A| + |B|$ .

**Short answer (1 point each)**

4: How many elements does the set  $\{a, \{b, \{c, d\}\}, e\}$  have?

5: If  $|A| = 9$ ,  $|B| = 10$  and  $|A^c \cap B| = 3$ , find  $|B^c \cap A|$ .

**Long answer (5 points)**

6: In a group of 120 people, everyone likes at least one flavor among strawberry, vanilla, and chocolate. If 40 people like vanilla, 10 people **only** like strawberry, 20 people like strawberry and vanilla, and 25 people like vanilla and chocolate, how many people like chocolate? Show work.