

Set theory questions

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Grethe Hystad

Problem 1 Let $S = \{1, 2, 3, 4, 5, 6\}$, $A = \{1, 3, 4, 5\}$, $B = \{2, 3, 5\}$.

- (i) Find $A \cup B$
- (ii) Find $A \cap B$
- (iii) Find $A \Delta B$
- (iv) Find \bar{A}
- (v) Illustrate DeMorgan's law, by finding $\overline{A \cup B}$ and $\bar{A} \cap \bar{B}$, and $\overline{A \cap B}$ and $\bar{A} \cup \bar{B}$.
- (vi) Find $A - B$

Problem 2 Let A, B , and C be the sets of points inside the circles indicated below: Shade the following sets in a Venn diagram: (Make a new Venn-diagram for each problem).

- (i) $A \cup B$
- (ii) $A \cap B$
- (iii) $A \Delta B$
- (iv) $A \cap B \cap C$
- (v) $C \cap (A \cup B)$
- (vi) $(C \cap A) \cup (C \cap B)$

