

MATH W4051 PROBLEM SET 3
DUE SEPTEMBER 29, 2009.

INSTRUCTOR: ROBERT LIPSHITZ

- (1) Let X be a topological space, $A \subset X$. Define the *boundary of A* to be $\partial A = A \setminus \text{Int}(A)$.
Prove: if $A \subset X$ and $B \subset Y$ then $\partial(A \times B)$ in $X \times Y$ is $[(\partial A) \times B] \cup [A \times (\partial B)]$. (This fact partly explains using ∂ to denote the boundary.)
- (2) Munkres 22.2
- (3) Munkres 23.9
- (4) Munkres 24.9
- (5) Munkres 25.4
- (6) Problems 8–10 in the “Ordinals” handout.

Optional but encouraged:

- Munkres 25.3
- Munkres 22.4

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