

# Financial Mathematics

## Classification of measure spaces

2500-1. Let  $M := \mathbb{R}$  and let  $N := (0, 3) \sqcup [4, 5)$ .  
Give each its standard  $\sigma$ -algebra.  
Find a Borel isomorphism  $M \rightarrow N$ .

2500-2. Let  $M := (0, 3]$  and let  
 $N := (0, 3) \sqcup (4, 7)$ .  
Give each its standard  $\sigma$ -algebra.  
Find a Borel isomorphism  $M \rightarrow N$ .

2500-3. Let  $M := (0, 3]$  and let  
 $N := [0, \pi] \setminus \{\sqrt{2}, \sqrt{3}\}$ .  
Give each its standard  $\sigma$ -algebra.  
Find a Borel isomorphism  $M \rightarrow N$ .