# Logics and Mathematics $-9^{\text {th }}$ lecture Exercise sheet 

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Problem 1 Show the countability (countable infinite set) of the sets below:

- negative odd numbers
- For fixed primes $a, b \in \mathcal{P}$, the set $P_{a, b}=\{n \times a+m \times b: n, m \in \mathbb{N}\}$

Problem 2 Using the fact that $(0,1)_{\mathbb{R}}$ is uncountable, show that the following sets are also uncountable:

- $\left\{(x, y) \in \mathbb{R} \times \mathbb{R}: x^{2}+y^{2}=1\right\}$
- negative real numbers: $\{x \in \mathbb{R}: x<0\}$

