## Logics and Mathematics – 9<sup>th</sup> 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:

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