Seminar 2
Relations and functions

1. Enumerate the power set of A, if $A = \{a, b, c, d\}$!

2. Let $A = \{1, 2\}$, $B = \{1, 2, 3\}$! What is

   - $A \times B$ and $B \times A$

   - $(A \times B) \cap (B \times A)$

   - $(A \times B) \setminus (B \times A)$

   - $(A \times B) \cap B$

3. Illustrate the set $\mathbb{Z} \times \mathbb{R}$ in the Cartesian coordinate system! $(\mathbb{R} \times \mathbb{R})$

4. Show a reflexive, a symmetric and a transitive relation over sets A and B!

5. Parallel lines

6. Are the functions below injective, surjective, bijective?

a) $f(x) = x^2$ d) $i(x) = x^3$

b) $g(x) = sinx$ e) $j(x) = x^3 - x$

c) $h(x) = sinx \mid [-\frac{\pi}{2}, , \frac{\pi}{2}]$ f) $k(x) = ax + b, a \neq 0$