1. Prove that $\forall x(\varnothing \subseteq x)$.
2. Show that $\forall x(x \in \mathbb{P}(x))$.
3. Prove that no natural number can be both even and odd at the same time.
4. Show that there are no positive integers x and y that solve $x^2 - y^2 = 10$.
5. Prove that every graph with 2 or more nodes contains two distinct nodes with the same degree.
6. For every set X, show $|X| \leqslant |\mathbb{P}(X)|$ by proving that there is no onto function from X to $\mathbb{P}(X)$.