True or False?
(test 5, 18/12/2013)

Naam:______________________________
Studentnr.:___________________________

True		**False**
☐	1. Any quotient of a compact space is compact.	☐
☐	2. Any compact space is Hausdorff.	☐
☐	3. The cone of any compact space is compact.	☐
☐	4. $\{(x,y,z) \in \mathbb{R}^3 : sin(y^{2013} + z^{2014}) \leq x^2 + y^2 + z^2 \leq 2013 \cdot sin(xyz) + 2014\}$ is compact.	☐
☐	5. The closure of any bounded $A \subset \mathbb{R}^n$ is compact.	☐
☐	6. The product of three compact spaces may fail to be compact.	☐
☐	7. If X is Hausdorff, $f : X \to \mathbb{R}$ is continuous and bounded, then there exists $x_0 \in X$ such that $f(x_0) = \sup\{f(x) : x \in X\}$.	☐
☐	8. If X is compact, $f : X \to \mathbb{R}$ is continuous, then there exists $x_0 \in X$ such that $f(x_0) = \sup\{f(x) : x \in X\}$.	☐
☐	9. For any sequence $(x_n)_{n\geq 1}$ in $\mathbb{R}$, there exists a subsequence $(x_{n_k})_{k\geq 1}$ and a sequence of integers $(a_k)_{k\geq 1}$ such that $(x_{n_k} + a_k)_{k\geq 1}$ is convergent.	☐
☐	10. If $K \subset \mathbb{R}$, together with the topology induced by the lower limit topology, is compact, then also K with the Euclidean topology is compact.	☐

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