Group 4

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Introduction to Proof and Problem Solving

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Problem 4a.

$$P_1(f) \equiv \{\forall M \in \mathbb{R}, \exists x \in \mathbb{R} \text{ such that } f(x) > M\}$$

$$P_6(f) \equiv \left\{\exists (M, K) \in \mathbb{R}^2, \text{ such that } \forall x > K, f(x) > M\right\}$$

Prove or disprove

$$\{\forall f \text{ satisfying } P_6, f \text{ satisfies } P_1\}.$$

Proof. We will prove the statement is true.

Let f_0 be any function satisfying P_6. Let (M, K) be any ordered pair in $\mathbb{R}^2$ such that f_0 satisfies P_6.

□

While working on this proof, we received no external assistance aside from advice from Professor Mehmetaj.