SI 5: Min, Max and Division

1 Definitions of $min()$ and $max()$

Define $max()$ **as:** $max(n, m) = p$ **iff**

$$m \leq p \ \& \ n \leq p$$
$$\forall q \in \mathbb{R}, \text{ if } m \leq q \ \& \ n \leq q, \ p \leq q$$

Define $min()$ **as:** $min(n, m) = p$ **iff**

$$p \leq m \ \& \ p \leq n$$
$$\forall q \in \mathbb{R}, \text{ if } q \leq m \ \& \ q \leq n, \ q \leq p$$

For the following: Use the definitions to explain why the statement is false.

1. $min(3, 4) = 4$
2. $max(3, 4) = 5$
3. $max(\pi, 3) = 3$
4. $min(12.32, 12.3) = 11$

2 Divisibility

5. Come up with a formal definition for "divides", namely, $m|n \iff$ _____

Prove the following:

6. if $m|n$, then $m|np \ \forall p \in \mathbb{R}$
7. if $m|n$ and $m|p$, then $m|n + p$
8. if $m|n$, then $m|p \iff m|n + p$