

Universal Conditional Statements

Example:

Consider the two predicates $P(x)$: x is a factor of 4 and $Q(x)$: x is a factor of 8. Show that $P(x) \Rightarrow Q(x)$.

Answer: Finding the truth set of each predicate we have:

- $T_P = \{1, 2, 4\}$ and
- $T_Q = \{1, 2, 4, 8\}$.

where T_P is the truth set of $P(x)$ and T_Q is the truth set of $Q(x)$. Since every number appearing in T_P also appears in T_Q :

$$\{1, 2, 4\} \subset \{1, 2, 4, 8\},$$

then we have $P(x) \Rightarrow Q(x)$.