Predicates

Some logical statements depend on variables. Consider:

- Let $P(x)$ denote the statement "$x \in \mathbb{Z}$". Is $P(3)$ true? Is $P(\sqrt{7})$ true?
- Let $Q(x, y)$ denote the statement "$|x| > |y|$". Is $Q(\{3, 5\}, \mathbb{Z})$ true? Is $Q(\mathbb{Z}, \emptyset)$ true?
- Let $R(x)$ denote the statement "$0 \in x$". Give an example of x for which $R(x)$ is false.