

MATH 2001, Discrete Math

Notes and examples on statements and open sentences

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An open sentence is a sentence whose truth depends on a variable x .

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Example: P : Just do it.

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P is not a statement.

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Example: P : If x is an even integer, then it is divisible by 6.

Ex: Q : The integer x is even.

It actually should be written $Q(x)$, and $Q(x)$ is an open sentence, whose truth depends on the value of x .

Example: P : If x is an even integer, then it is divisible by 6.

P is a statement (and not an open sentence). It is false.

Example: $P: x \in E$

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Ex: $Q: \emptyset \in \mathcal{P}(E)$

It actually should be written $Q(E)$, and $Q(E)$ is an open sentence that is true for all sets E .

Example: P : For every set E , $\emptyset \subseteq \mathcal{P}(E)$.

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This is a statement (and not an open sentence). It is true.