

Name: _____

QUIZ 4 ♠

MATH 211
January 31, 2023

In each numbered question below, a sentence or expression is given. Say whether it is a statement, an open sentence, or neither. Also say whether it is true or false, neither true nor false, or whether that depends on the circumstances.

| | Sentence or expression | Statement? Open sentence? Neither? | True? False? Neither? Depends? |
|----|---|--|---|
| 1. | $\emptyset \in \mathcal{P}(\mathbb{Z}) - \mathcal{P}(\mathbb{N})$ | | |
| 2. | $\mathcal{P}(\mathbb{Z}) - \mathcal{P}(\mathbb{N})$ | | |
| 3. | If the number x is negative, then $x < -x$. | | |
| 4. | The number x an integer, and $x < -x$. | | |

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| | Sentence or expression | Statement? Open sentence? Neither? | True? False? Neither? Depends? |
|----|--|--|---|
| 1. | $\mathcal{P}(\mathbb{Z}) \cap \mathcal{P}(\mathbb{N})$ | | |
| 2. | $\emptyset \in \mathcal{P}(\mathbb{Z}) \cap \mathcal{P}(\mathbb{N})$ | | |
| 3. | The derivative of a constant function is zero. | | |
| 4. | The derivative of the function f is zero. | | |

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| | Sentence or expression | Statement? Open sentence? Neither? | True? False? Neither? Depends? |
|----|--|--|---|
| 1. | $\{2, 4, 6\} \in \mathcal{P}(X)$ | | |
| 2. | $\mathbb{Z} \times \emptyset = \emptyset$ | | |
| 3. | The set $\{\emptyset\}$ is the only set with cardinality zero. | | |
| 4. | List the set X between braces. | | |

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| | Sentence or expression | Statement? Open sentence? Neither? | True? False? Neither? Depends? |
|----|--|--|---|
| 1. | $(0, 1) \in \mathbb{Z} \times \mathbb{N}$ | | |
| 2. | $\{2, 4, 6\} \subseteq X$ | | |
| 3. | The number 2 is the only odd prime number. | | |
| 4. | The number x is an odd prime number. | | |