

# Math 2283 - Introduction to Logic

Quiz #5 - 2010.09.20

Solutions

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First, translate the following logical sentence into an English sentence. Then, determine if this statement is true or not.

$$\forall y \left[ \exists x (x + 2y = 5) \wedge \forall_{x_1, x_2} \{ \sim [(x_1 + 2y = 5) \wedge (x_2 + 2y = 5)] \vee (x_1 = x_2) \} \right]$$

As an English sentence, this would read: For each  $y$ , there is exactly one  $x$  value which satisfies the equation  $x + 2y = 5$ .

This statement is true, since for a given  $y$ , the  $x$  value we would choose is  $5 - 2y$ .