

# Math 2283 - Introduction to Logic

## Quiz #2 - 2016.01.15 Solutions

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1. State if each of the following is a (i) sentence, (ii) designatory function, (iii) sentential function, or (iv) constant.

(a) The mother of Alice and Bob.

a constant

(b) The son of  $x$  and  $y$ .

a designatory function

(c) The mother of Alice and Bob is June.

a sentence

(d) The mother of Alice and Bob is  $x$ .

a sentential function

(e)  $\forall x (x^2 > y)$

a sentential function

(f)  $\forall x \exists y (x^2 > y)$

a sentence

(g)  $x^2 > y$

a sentential function

(h)  $x^2 - y$

a designatory function

2. Determine if each of the following quantified statements is true or false.

(a)  $\exists x, y (x \cdot y > -1)$

True

(b)  $\forall x, y (x \cdot y > -1)$

False

(c)  $\forall x \exists y (x \cdot y > -1)$

True

(d)  $\exists y \forall x (x \cdot y > -1)$

True