Math 2283 - Introduction to Logic

Quiz #11 **- 2008.11.24**

Name: _____

Consider the following relation D defined as follows:

$$xDy = x - y, \quad \text{in the case that } x \geq y$$
$$xDy = y - x, \quad \text{in the case that } x \leq y$$

Definitions to remember:

An operation O is commutative if for any x and y: $xOy = yOx$.
An operation O is associative if for any x, y and z: $xO(yOz) = (xOy)Oz$.
An operation O is right-invertible if for any x, y one can find a z such that : $x = yOz$.
An operation O is left-invertible if for any x, y one can find a z such that : $x = zOy$.

1) Is the operation D commutative?

2) Is the operation D associative?

3) Is the operation D left- or right-invertible?