York University

Lassonde School of Engineering
EECS
MATH 1090A. Problem Set #4
Posted November 18, 2016

Due: December 5, 2016; 3:00pm, in the course box

Annotation is required!
(5 MARKS/Each) **Do the following problems**.

1. Correctly state *and* prove the *bound variable renaming metatheorem* for $\exists$.

An Equational proof is required.

2. True or False? $(\exists \mathbf{x})(A \to B) \vdash (\exists \mathbf{x})A \to (\exists \mathbf{x})B$.

If you answered "True", then give a proof.

If you answered "False", then give a semantic proof (countermodel) of your claim.

3. True or False?

$$\vdash \Big((\forall \mathbf{x})A \to (\forall \mathbf{x})B\Big) \to (\forall \mathbf{x})(A \to B)$$

If you answered "True", then give a proof.

If you answered "False", then give a semantic proof (countermodel) of your claim.

From the Text:

4. Section 6.6: Numbers 2, 18, 19, 23, 24, 32

5. Section 8.3: Numbers 8, 10, 11