MATHEMATICAL LOGIC — ASSIGNMENT TWO

(1) Prove that $A \vee \exists x.\, B = \exists x.\, (A \vee B)$ when $x \notin \mathsf{FV}(A)$. Show a counterexample when $x \in \mathsf{FV}(A)$.
(2) State the Upward Löwenheim-Skolem Theorem.
(3) Define an alternative model of integers in which there is an infinite number.

Each question is worth 12 points. The points in all the four assignments will be added together and the result will be divided by 4, and this will be the final result. Remember to mark your answer sheet with your name.

Date: April 30^{th} 2021.