CSE541 EXERCISE 11

Chapters 10, 11, 12 Read and learn all examples and exercises in the chapters as well!

QUESTION 1 Use the (complete) proof system GL from chapter 11 to prove that
\[ \models (\neg(a \cap \neg b) \Rightarrow (\neg a \cup b)). \]

QUESTION 2 Find a counter-model determined by a decomposition tree \( T_{\neg A} \) in GL for a formula \( A \) below.
\[ A = ((a \cap \neg b) \Rightarrow (\neg a \cup b)) \]

QUESTION 3 Prove the COMPLETENESS theorem for GL. Assume that the Soundness has been already proved.

QUESTION 4 Show that
\[ \vdash_{LI} ((\neg A \cup B) \Rightarrow (A \Rightarrow B)). \]