INTRODUCTION TO COMPUTATIONAL LOGIC
HOMEWORK 6
DUE DATE: DECEMBER 30, 2020

(1) Show $\phi \,\mathbf{U}\, \psi \equiv \psi \,\mathbf{R}\, (\phi \vee \psi) \wedge \mathbf{F}\psi$ using semantic equivalences.
(2) Give a model $\mathcal{M} = (S, \to, L)$ and $s \in S$ such that $\mathcal{M}, s \models \mathbf{AF}(\phi \vee \psi)$ but $\mathcal{M}, s \not\models \mathbf{AF}\phi \vee \mathbf{AF}\psi$.
(3) Express the following statement in CTL^*:
"the event p is never true between the events q and r on a path."
(4) Show $\mathbf{AGF}p$ and $\mathbf{AGEF}p$ specify different properties.