**Name:**          **Entry No.:**

1. [**1 marks**] Is it true that we can transform any proof of $\phi_1, \phi_2, \ldots, \phi_n \vdash \psi$ into a proof of the theorem $\vdash \phi_1 \to (\phi_2 \to (\phi_3 \to (\ldots \to (\phi_n \to \psi) \ldots)))$? If not, explain why. If yes, sketch the transformation.

2. [**1 marks**] Give a natural deduction proof of validity of the sequent $(p \vee q) \vee r \vdash p \vee (q \vee r)$.

3. [**1 marks**] Give a natural deduction proof of the law of excluded middle using basic proof rules.