1. Harad has \( n \) towns and \( n - 2 \) roads between towns. Show that you cannot travel from any town to any other town through a sequence of roads.

2. In Beleriand, there are \( 2n \) villages and every village has roads to at least \( n \) other villages. Show that you can travel from any village to any other village through a sequence of roads.

3. In Gondor, there are \( 2n \) towns, every town has roads to at least \( n - 1 \) towns, and the largest town has roads to at least \( n \) towns. Show that you can travel from any town to any other town through a sequence of roads.

4. A horde of orcs have attacked the town of Osgiliath in Gondor. Osgiliath no longer exists and all roads to Osgiliath no longer exist. Luckily, Osgiliath only had roads to \( n - 1 \) other towns. Show that you still can travel from any town to any other town through a sequence of roads.