1. Show that if $G = (V, E)$ is a graph, then G is connected whenever

$$\epsilon > \binom{\nu - 1}{2}.$$

2. Show that if G is a graph that is not connected, then the complement G^c of G is connected.

Note:

The **complement** of a graph $G = (V, E)$, denoted G^c, is the graph whose vertices are V and whose edges are precisely those (u, v) that do not belong to E, where $u, v \in V$.