We study the distances and gravitational lensing in spherically symmetric inhomogeneous cosmological models consisting of inner and outer homogeneous regions which are connected by a single shell or double shells at the redshift $z_1 \sim 0.067$. The density and Hubble parameters in the inner region are assumed to be smaller and larger, respectively, than those in the outer region. It is found that at the stage $z_1 < z < 1.5$ the distances from an observer in the inner void-like region are larger than the counterparts (with equal $z$) in the corresponding homogeneous Friedmann models, and hence the magnitudes for the sources at this stage are larger. This effect of the void-like low-density region may explain the deviations of the observed [magnitude-redshift] relation of SNIa from the relation in homogeneous models, independently of the cosmological constant. When the position of the observer deviates from the center, moreover, it is shown that the distances are anisotropic and the images of remote sources are systematically deformed. The above relation at $z \geq 1.0$ and this anisotropy will observationally distinguish the role of the above void-like region from that of the positive cosmological constant. The influence on the time-delay measurement is also discussed.