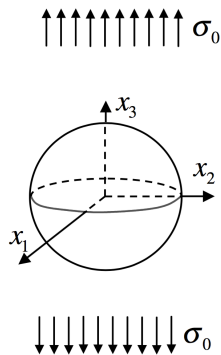


Q1. A spherical cavity of radius a is present in an otherwise uniform, isotropic, linearly elastic solid of infinite extent with Poisson's ratio ν . A uniaxial tension is applied at infinity as shown in figure below.

- a. Use the equivalent inclusion method to find the stress components at points $(0, 0, a)$ and $(0, a, 0)$. Plot the stress concentration factors versus the Poisson's ratio.
- b. Plot the external stress fields along the equator outside the cavity $(x_1, x_2, 0)$. Use the D_{ijkl} tensor defined in class and in Mura's book.



Q2. We are interested in obtaining the displacement and strain fields associated with an edge dislocation as given in Mura's book. For the **isotropic** case and using the Green's function method (Eqns 4.11, 4.15 and 5.10 Mura), derive the displacements $u_1, u_2,$ and u_3 and the strains.

