$A = 3$

$$L^2 = L^2(\rho) + \frac{L^2(\Omega)}{\rho^2} = \frac{\partial^2}{\partial \rho^2} + \frac{5}{\rho}\frac{\partial}{\partial \rho} + \nabla_{ij}^2$$

$$\nabla_{ij}^2 = \left[1 - \frac{r_{ij}^2}{\rho^2}\right]\frac{\partial^2}{\partial r_{ij}^2} - \left[\frac{5}{\rho^2} r_{ij}^2 - 2\right]\frac{1}{r_{ij}}\frac{\partial}{\partial r_{ij}}$$

when $\rho \to \infty$ $\quad \nabla_{ij}^2 \to \frac{\partial^2}{\partial r_{ij}^2} + \frac{2}{r_{ij}}\frac{\partial}{\partial r_{ij}}$

The adiabatic eq. results

$$\left(-\frac{\hbar^2}{m}\nabla_{ij}^2 + V - E\right)\phi_0(r_{ij}) = 0$$

$A = 4$