First we review philosophy of spectral methods and their salient features. We discuss advantages of these methods when solving elliptic PDEs. Lastly we apply it to an eigenvalue problem $(\frac{1}{2}(p_x^2 + p_y^2) + \frac{1}{2}(\omega_x^2 x^2 + \omega_y^2 x^2) + i\, g\, x\, y^\alpha)\psi = \lambda\psi$, where g is a real and α is a positive parameter.