Q:1 (5 points) Find eigenvalues and eigenvectors of the boundary value problem

\[ y'' + 2y' + \lambda y = 0 \text{ with } y(0) = 0 \text{ and } y(1) = 0. \]
Q:2 (5 points) Find eigenvalues and eigenvectors of the boundary value problem

\[ x^2y'' + xy' + \lambda y = 0 \text{ with } y(1) = 0 \text{ and } y(e) = 0. \]