Math 605-01 (172) Quiz #1

1) Find the WKB approximation to the solution of the initial value problem

$$-\frac{d^2y}{dx^2} = \lambda(4+x^2)^2 y \ , \ y(0) = 0 \ , \ y'(0) = 1$$

for λ large and positive

2) Approximate the large eigenvalues and corresponding eigenfunctions of the Sturm-Liouville problem,

$$-\frac{d^2y}{dx^2} = \lambda(4+x^2)^2 y \ , \ y(0) = 0 \ , \ y(1) = 0$$

The eigenfunctions are normalized using $y'(0) = 1$.