Homework 14

1. Find leading-order uniform asymptotic approximations to the solutions of

   (a). $\epsilon y'' + (\cosh x)y' - y = 0, y(0) = y(1) = 1$ $(0 \le x \le 1)$,

   (b). $\epsilon y''+(x^2+1)y'-x^3 y = 0, y(0) = y(1) = 1$ $(0 \le x \le 1)$, in the limit $\epsilon \to 0+$.

2. Obtain a uniform approximation accurate to order ϵ^2 as $\epsilon \to 0+$ for the problem $\epsilon y'' + (1+x)^2 y' + y = 0[y(0) = 1, y(1) = 1]$.

3. Find a lowest-order uniform approximation to the boundary-value problem $\epsilon y'' + y' \sin x + y \sin(2x) = 0[y(0) = \pi, y(\pi) = 0]$.