

AMATH 568
Winter Quarter 2023
Professor J. Nathan Kutz

HOMEWORK #6: Due – February 22, 2023

1. Consider the singular equation:

$$\epsilon y'' + (1+x)^2 y' + y = 0$$

with $y(0) = y(1) = 1$ and with $0 < \epsilon \ll 1$.

- (a) Obtain the leading order uniform solution using the WKB method.
- (b) Plot the uniform solution for $\epsilon = 0.01, 0.05, 0.1, 0.2$.