Numerical Analysis and Visualization

Homework 2

September 27, 2016

1. Construct the free cubic spline for the following data.

x	f(x)
0.1	-0.29004996
0.2	-0.56079734
0.3	-0.81401972

2. Data are given describing a car traveling on a straight road. Use the following times and positions, predict the speed at each time listed.

Time	0	3	5	8	10	13
Distance (m)	0	225	383	623	742	993

3. Approximate the following integrals using the Trapezoidal rule, Simpson rule and Gaussian quadrature with $n = 2$. Then compare your results to the exact values of the integrals.

   (a) $\int_0^1 x^2 e^{-x} dx$.