Homework 11
Due: *Tuesday* 4/17/2018

- Assignments are due at the beginning of class on the due date.

- Any Matlab/R files are to be submitted as .m or .R files via Moodle (with a corresponding run/driver file if necessary).

- Each file must be uploaded individually. Zipped files will not be graded.

- Show all work and provide discussion where needed in order to receive full credit.

We seek to develop a (sub)model which will enable us to simulate the arrival time between ships at a harbor. Data is collected for 1200 ships and displayed below.

Time between arrivals (in minutes), t	Num of Occurences
15 - 24	11
25 - 34	35
35 - 44	42
45 - 54	61
55 - 64	108
65 - 74	193
75 - 84	240
85 - 94	207
95 - 104	150
105 - 114	85
115 - 124	44
125 - 134	21
135 - 144	3

1. Compute the probability of occurrence for the data, and the cumulative probability of occurrence.

2. Plot a cumulative histogram for the data and plot the data points you will use to determine the empirical (experimental) cumulative distribution function.

3. Use cubic splines to develop a model for the data.

4. Using the inverse cubic splines, run some simulations choosing a random number in the interval $[0, 1]$, plugging in into the inverse spline, and obtaining an estimation for the corresponding arrival time, t. Organize your results in a chart.