Homework 10
Due: 4/12/2018

- 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.

Use Monte Carlo simulations to work the following problems.

1. Using Monte Carlo simulation, calculate the area trapped between the curves $y = x^2$ and $y = 6 - x$ and the x and y axes.

2. Simulate a drunkard's walk for $n = 100$ steps. As he leaves the bar at $(0,0)$, each step is in a random direction of length $L = 1$. After the ith step, $(x_i, y_i) = (x_{i-1}, y_{i-1}) + (\cos\theta, \sin\theta)$, where θ is chosen randomly from $[0, 2\pi]$. Plot one simulation of the path of the drunkard. Run some simulations to estimate the expected (average) value of his **distance** $d(n)$ from the bar after n steps.